The Builder.

SATURDAY, FEBRUARY 18, 1854.

ALTHOUGH, since the letters which appeared in our pages on the question of Architects' Responsibilities, we have not given any prominent place to matter bearing upon the subject which was so strikingly brought before the attention of the profession by the proceedings following the accident in the Strand, we need hardly say we have felt that the interests of architects were deeply concerned in the points involved. These are more numerous than what may be connected with the sufficiency of shoring and the maintenance of adjoining buildings, or personal injuries to the public, and indeed include many which have heretofore been discussed in these pages. Yet, considering what is due, whether to the profession or to others, it has become necessary, whatever may appear the immediate result to architects, that the general question should be brought to some definite conclusion.

The main point to be determined is, whether the practical architect is to accept the entire responsibility of direction—down to the most trifling details of materials and workmanship—or whether he should *disclaim* any such extreme responsibility. It is no argument for blinking the question, that there might be injury to himself from one or other alternative, or, at least, it *will* not be so considered. Perhaps the attention of an individual might be absorbed by a small number of buildings, or even by a single unremunerative work: on the other hand, the "occupation" might be "gone," as regards those employers—and they are pretty numerous—who regard an architect chiefly as the superintendent of works. The nature of the responsibility must, however, be decided in one way or other, or the public will hasten the decision,—and indeed should do so. That decision had better be the act of those who have full knowledge of important elements in the question. With frequent reports about falling houses—always perversely placed to the discredit of architects—the recent case may not be the only one exciting the ready rhetoric, though doubtful logic, of some influential portion of the press.

It is not unimportant here to allude to the insufficiency of the present system of remuneration, in the majority of works,—those very cases where the employment of an able architect would be most beneficial, in regard to general taste, and as to social comfort, morals, and health. If the first of the alternatives we have put be assumed—here supposing the architect to be morally justified in accepting such obligations—the system would be even more unfair to the individual than any actual system may be practically; but if assumed without the power of ready performance, the system becomes destructive to those real interests of the community, which we say the existence of professional knowledge should advance. The reconsideration of that which one day involves politely concealed suspicion as to reasons for expenditure, and in another instance is so much the accepted system, that an architect is denied fair remuneration for his labour, ought ere long to force itself upon general attention.

If the other alternative be accepted,—probably until the nature and value of an architect's services were better understood, a greater number of the public would essay to make their own plans, as some of the clergy now do, after a fashion,—or something in place of drawings would be otherwise prepared by incompetent persons. Some may be hardly aware how many of the houses round about London, now are built without plans of any kind,—for a few rough lines on a piece of board, to no particular scale or proportion, can hardly be of real service. Dangerous ascents to entrance-doors, badly-contrived staircases, and inconvenient arrangements generally, are the inevitable results of the omission of the use of available experience and knowledge,—and without reference to matters of art.

We repeat, then, that whatever may appear the immediate results of *declaring* the position and duties and reasonable expectations of the profession, some such endeavour should be made.

Architects' responsibilities may be viewed in two main positions,—as the question of legal liability, and that of moral responsibility. We trust that no architect will attach an importance to the first question at all comparable with that of the other. The principle of the profession not only involves the maintenance of high rectitude and honourable conduct—a position, with few exceptions, we really believe, maintained, whatever the apparent worldly inducements to the contrary,—but the members of the profession *depend* upon the full recognition of a moral responsibility for their ultimate success. It is therefore necessary to inquire not only what an architect contracts with his employer to do for him, and what liabilities he may make for himself by directions to workmen, but it is also necessary to consider what services an employer new to the engagement of an architect would suppose were being rendered; for, all such the architect must supply, or, as an honourable man, must actively disabuse the other of the error.

But considering, first, the legal liability,—After a very patient examination of the matter at stake, we conclude that under any circumstances it is a most serious one. In Mr. Abraham's case, it turned solely upon the evidence, whether the architect by his directions to a number of ignorant workmen, had made himself liable for an accident, which the mere cut of a spade during an instant's averted attention might have brought about; and it is scarcely surprising, whatever the general view of the points at issue, that such a protest as that in the able letter of our correspondent "R. K." should have been entered against the idea which seemed for a while to catch the public mind, that the architect of a building was in any case and every case, to be held accountable for doings of his subordinates, which no possible foresight, and no reasonable amount of attention could prevent. Still, though the architect may not be fairly responsible for what "the builder does merely for his own purposes," he is daily incurring serious liabilities for the advantage of both builder and employer, which occasion him no benefit, and deprive him even of the satisfaction afforded by correctly executed work. Our readers can hardly have forgotten the case of Ivimey *v.* Elliott, tried in the County Court of Southampton, and which we thought of sufficient importance to make it the subject of a leading article in January in last year. In that case it was contended, that where there were unprecedented difficulties, as in the case of an exposed site, the architect, being supposed "to know the laws of nature," was bound to foresee and provide against the special circumstances by unusual provisions. The builder had not put the lap of slates ($2\frac{1}{2}$ inches) which was specified: but the judge held that though damage might have in truth occurred from defective execution, the architect was "still liable, because of the original defect in specifications." We avoid remark here.

But, more than this, it was ruled that the interference of a building owner in directions "would not relieve the architect if he were subsequently made aware of the alteration made by his employer;" that is, we suppose, *without protesting against it*, or rather, perhaps, without throwing up his engagement. All these liabilities would have been serious enough; but the real peril in which, as we just now hinted, our professional brethren stand, had still to be shown.

It constantly happens, despite the frequent attendance of the architect, that defects of the most annoying kind will escape attention,—nay, as it were, under the very nose of an active clerk of the works, falsifications of a nature most degrading to the character of the building trades will go on. We are lost in amazement when we look at the extent to which the idea of a special virtue in money-getting seems to sanctify every real vice in most of the callings in life. The object to be attained is often so utterly insignificant, that we know not what motive of self-interest even, can thus obscure the natural moral perception of right and wrong. We have known in the case of the floor of a single room, specified to have grooves and tongues, a portion laid without tongues, whilst the clerk of the works went to dinner,—the last board exposed being adroitly grooved, as though the whole were similar. Not many weeks ago a parallel thing occurred, where an architect had specified a course of slates in cement in the lower part of a building, and where a mere strip, of an inch or so wide, was found in the bed of the bricks at the face of the wall. The story of the piece of "landing," which was built into a flue, is a standing one in the profession. The particular instances first mentioned, were traced rather to the master builder than to the workman, which, indeed, makes the matter more extraordinary; but what hope is there for an architect to prevent such things universally, when lack of principle in the master, and lessening skill in the workman, are against him. And yet the theory of the architect's position, as it stands at present, assumes a knowledge of every one of the numerous trades required in building, superior to the knowledge of the tradesman himself.

But to return to what we were about more especially to notice, and in connection with the case at Southampton. Can we say what the architect is to do, as a rule, in the case of defects discovered—considering now merely the accidental? To direct the work to be taken down, and placed as specified, might, in some cases, ruin not merely the builder, who may be for the present disregarded, but the building owner himself. The good sense of the architect points to one way in which the work will answer the purpose, namely, that way in which it was specified. He must, however, sacrifice his sense of right, and put up with what has newly turned out to be suitable to the private objects of his client. Is the architect, then, to be legally liable for defects arising from a ready remedy which he has been asked to suggest, unaided by the regular course of inductive reasoning which brought him to the determination of the original contrivance. What said Judge Gale in the case referred to? Only this, brother architects! that "if an architect finds out a defect, and suggests a remedy, and that fails, he is equally answerable for all the consequences."

Thus it would appear, as we said a year ago, "that no architect or engineer can try an experiment or a new material with the slightest safety: he will be absolutely at the mercy of every workman disposed to cheat, or of any unprincipled employer inclined to avail himself of his own especial directions to cut down the work to the lowest sum, and saddle the architect with all the risk of cheap building." How will such a view of the question suit the engineers of falling bridges and sinking earthworks?

Yet it is not the less true, that such is the letter of the law; and it behoves architects to

exercise increased vigilance as to the observance of specifications, and increased stringency in dealing with opposition to them; and if ready remedies should be absolutely required, to apply these after protest, and with the full sanction of the employer in such form, as may remove all legal liability.

It is not without reference to the present inquiry, to look at the position of architects elsewhere, as set forth in some papers on the Responsibilities and Rights of Architects and Builders in France, which appeared in our seventh volume. It was there truly stated, that the English law had not been so clearly laid down. The general principles upon which the decisions of courts would rest, however, seem to us the same. In France, an architect is held responsible for every defect arising out of his design, or anything set forth in his plans and specifications. Supposing that he is employed merely to *design*, he is not responsible for defects of the soil, or for infraction of the rights of neighbours, or of the municipal, or police regulations. We are not informed how these latter points would be considered, were the design made, as indeed must generally be the case, for a particular site. Though proceedings might seldom be taken—might the architect in London, not carrying out his own design, in such a case be held liable for contravention of the Buildings Act? It seems not unfair that he should be so, although not for defects in foundations.

When the architect is entrusted with the carrying out of his own design, in France, "he becomes responsible for the faithful execution of the works; for it is he who undertakes to give the workmen proper instructions as to the kinds of materials to be employed, the manner of using them, and the dimensions of the separate parts. If the builder or his workmen deceive him in such a manner as to induce an impartial person to believe that with proper caution the architect might have detected the fraud, he naturally becomes responsible; but he has his recourse against the said parties But if the deceit were of such a nature as to defy ordinary inspection, then he is exonerated, and the responsibility lies only with those who have been guilty of the fraud." But, it elsewhere appears that in all cases of defects in construction, or foundation, or of neglect, the architect firstly, and subsidiarily the builder, are responsible. The liability ceases with ten years. Moreover, as nothing of importance ought to be executed without his orders, any infraction of the laws regulating the rights of neighbours, or of the municipal or police regulations, exposes him (the architect) to a claim for damages. An adjoining owner may proceed against the proprietor, but the latter has his remedy against the architect. Payment of money by the proprietor without the certificate of the architect, is held to release the latter from responsibility, so far as defects arise from bad execution. It is rightly held that the power of refusing a certificate is the only efficient means that the architect has of controlling the execution of the works. If an architect be called in to value work executed, his obligation to render strict justice to all parties requires him to make a report if he observe that either the "laws of the art of building," or the municipal laws have been violated so as to involve serious consequences.

But, to place before our English readers complete *data* for an estimate of their own responsibility, moral at least—on the French view of the question—we must look at the responsibilities of builders. Notwithstanding the employment of an architect, it would seem that the builder is still bound to the proprietor by his contract; though his engagement implies that he will follow the directions received, where he can *legally* do so. Alterations in the mode of execution, for his security, he must have ordered in writing. Verbal orders are supposed to warrant the builder only so far as they may be "conformable to the rules of art." Should the plans require any new mode of construction, or involve the infraction of existing rights, the builder is to point out any objections to their adoption. His responsibility is covered—except as to the municipal rights—if he obtain a written order mentioning that it was given with the express intention of safeguarding him; but the consent of the proprietor is also required. The municipal authorities can recover from any of the parties.

The builder is not exonerated from the liability for results of defective materials, even though these have been accepted by the architect; and even if the employer furnish any of the materials, and the builder recognise defects, he is bound to call the attention of the proprietor to them, and retains his liability in the absence of a written discharge therefrom. The proprietor would otherwise claim from either architect or builder; though, should the defects be such as the ordinary care of the architect would not discover, the latter can claim from the builder.

In cases of fraud on the part of architect or builder, liability is not confined to the ten years, but extends to thirty years from the date of discovery of the fraud.

In the case of accident or damage, from whatever cause, before the work has been delivered up, the loss falls upon the contractor; though where the contract is for labour only, the proprietor loses the value of any of the labour, the receipt of which has been shown by the fact of having paid for it.

On any of the foregoing points, and others (as set forth in the papers in our seventh volume), where the judgment of practical persons is required, referees are named, to whom, we may remark, the remuneration is by no means considerable.

As to any real difference between the codified law of France, and the law of England as from time to time laid down by the bench, little need be said. The chances for an architect to escape scot-free would perhaps be greatest in this country; though the limitation of responsibility to ten years certain is an advantage. As to the permission to choose which party shall be proceeded against in certain cases,—that is allowed by the general principle of law, where architects are not concerned.

But as regards the moral responsibility, the law would appear to leave no doubt about what would be the public opinion in France. The same view must be taken in both countries, unless the circumstances concerned in the formation of such an opinion are more widely different than they are.

It is obvious that it is impossible for the individual architect personally to examine into every minute detail, yet the law does not make any difference between him and his subordinates in the superintendence: the liability is his. The distance of the building from his usual residence does not affect the question: it would be held that he should have declined to perform duties which he was not sufficiently well paid to see personally carried out.

It might be argued, as to the legal question, that the law attempts to oblige no performance of what is impossible. If the employer were allowed to suppose that the architect would do things, in the way of superintendence, which really *cannot* be done, the employer certainly would not be allowed to recover from the architect; but as we are advised, the courts would not readily assume such impossibility, and would even strain to show the reverse. The public, as represented by the *Times*, see but one responsibility, namely, that of the individual found in the direction of the works.

The really puzzling part of the question arises from the necessity which there appears, to retain the usual clauses as to defective work and maintenance of adjoining buildings—holding responsible the party by whom accidents are mainly caused,—and the necessity likewise, of placing the builder entirely under the directions of the architect. Will the contractor either say, you are the cause of accident by your directions, or, I cannot follow your directions, because I am responsible? Or will the employer, in the case of an accident, say to the architect,—You had the power to interfere, and so, by not interfering, have become the cause of the accident?

It might appear to the architect that the interest of his client, whether as to freedom from a *possible* claim from adjoining owners, or for the efficient execution of the building itself, required a certain course to be adopted. It is clear that an architect, in such case, might hardly avoid removing the legal liability from the builder to himself. He must either debar himself from the exercise of his ability to attain novel ends, and avoid a certain *enterprise*, more than excusable if founded upon knowledge, and such as has given us the chief works of the age, or he must get the distinct sanction of his employer in such cases. The result of the latter course, however, might be, that the employer might often suffer for the real incompetence of the builder, or his workmen. It is a hard case; but who should then suffer? Surely the individual who was to benefit by the solution of novel difficulties, rather than the architect—unless the latter have omitted to exercise the professional knowledge and skill for which he was chosen by the employer. It is useless to say a builder ought to be found who has complete practical skill: in many parts of the country, for small works, such a person is not to be found, or deficiencies are not discovered till too late. Is the architect to assume the position of the builder in such cases? Looking at the matter as to London builders, our correspondents might, indeed, have put the case a little stronger as to the modern system of general contracts. The architect, or his clerk of works, is too often compelled to take upon himself duties formerly exercised by the master carpenter, master bricklayer, or other head of his special business,—and often, has even to instruct workmen in their ordinary manipulation. Those who have had to carry out works in out-of-the-way parts of the country, would be able to speak feelingly as to the difficulties thrown upon them in the way referred to.

Is the architect then to accept *all* the responsibility, legal or moral, involved in these several bearings of the question. As to superintendence, clearly the only obligation he can recognise, is that of doing his best. All else we have shown he should, at the very beginning, precisely disclaim. We shall have to show in what form the course has been taken by one architect. But first, let us make an attempt to demonstrate what are the architect's duties.

This has been in effect done in previous papers. The duty of the architect is mainly to design the building in all its features, whether decorative or constructive, and to supply the drawings, specifications, and instructions requisite for its being executed by the workmen of the locality. The division of labour and the interposition of capital, required for the efficient and prompt carrying out of any important project, oblige him to treat with a master builder, or with one for each trade.—It is right to mention the real argument for the modern system of general contracts, namely, the greater approximation to the cost of the completed building, and that it is also argued that buildings are erected in a much shorter time, when the several tradesmen are subordinate to one having more experience in the direction of workmen, than any professional man can be expected to have, as well as peculiar means of turning labour to the best account, through his possession of capital. The men of different trades have to attend upon each other, and work together, and much time might be lost were it the business of the architect to see to each one's falling into his place at the proper moment.

It is the duty of the architect to procure contracts for the work at a fair price; and such duty would obviously not suffice without his seeing to these contracts being observed. During the progress of the works he must also be ready to give any special instructions that circumstances require, or as to modifications necessary.

Whilst the architect has thus to do with the actual fabric erection, the builder is to supply the materials, tools, labour, and manual skill; but that duty hardly could be completed unless he were able readily to apprehend the common forms of construction, and even to obviate the necessity of great particularity in the description of them. It appears to us, then, that there is an important distinction in cases such as that which produced this inquiry—and which distinction does not appear with sufficient clearness in the letters of our correspondents—namely, that between a tool or machine, and what is part of the works. *Ordinary* scaffolding seems to us to belong to the head of builders' tools; shoring we are inclined

to differ about with our correspondent, and rather place it as belonging sometimes to the one head and sometimes to the other. That matter we must shortly say a few words about specially.—But where the ordinary tools, or the means of the locality do not attain the object, the architect must design, or direct, with a view to supplying the deficiency; that is to say, unless the work is to be brought to a deadlock.

We are inclined to think that it is rightly enough assumed that the work is to be executed by the ordinary skill and appliances. Without further reference to the constantly discovered incapacity of workmen in the country, a particular arrangement in construction may require new forms of (even hand) tools to execute it. In such case, no line of demarcation such as exists in ordinary cases can be maintained. Just as much as (in the case put by "R. K.") the centering of a bridge—a mechanical contrivance incidental to the performance of the work, rather than part of the structure—is to be specially designed, so the same necessity is constantly arising even in the form of a plane or the shape of a turnscrew. Even in regard to scaffolding—in certain cases an architect cannot avoid taking upon himself responsibility for both design and superintendence. We have already expressed that view, by asking—who, in the place of architect, was to be held responsible for the accident at the New Crystal Palace,—there having in view, a responsibility apart from that to the employers, or as regards life and limb, and which last point has yet to be considered.

That any one so largely responsible as, after all points have been noted, an architect must remain, should be better paid than at present, there can be no question. In ordinary affairs the proper principle is to remunerate in proportion to responsibility; but in the case of an architect's remuneration, will any one tell us that 5 per cent. upon an outlay of a few hundred pounds pays for the mere labour and time? As a Liverpool architect says to us,—if architects are to stand in the position of underwriters or insurers, their commission should be increased.

Were we all good citizens in Plato's republic, and no one dishonest enough, for the sake of gain, to cheat the other, doubtless the duty of an architeet would be merely to design and specify, and direct such few modifications afterwards, as might be required. As we have some hope in the perfectibility of human nature, we dare say, when our race has been long spent, and perhaps, our journal even, numbered with the things that were, so happy a state may gladden the ranks of the race of architects. Let us contemplate even at this long interval, the remarkable prospect. Brickwork bonded according to the methods described in books, withes of flues built with pieces much larger than marbles, sand that will leave the fingers without a stain,—no positive need to mount the scaffold or to step the joists: builders and workmen, and manufacturers—all anxious to do right—not taking pleasure in cleverly doing wrong. But all this is not, and nothing like it is the case now.

Little as the public know of the serious expenses which are entailed upon them by the actual state of things—ready as every one seems to pay for a house upon any principle of assessed value *except* that of the sufficiency and durability of its internal construction—the notion of the advantage of superintendence seems more generally established than that of the value of design. With some of the Church Building Societies, an architect is little better than a superior kind of clerk of works,—an officer deemed necessary for matters structural, mechanical, or negociatory; but not expected to have, or at least to maintain, any opinion on questions of actual convenience, or of art. So little, till lately, was the importance of design felt in ordinary habitations, that it is to the absence of that element that we may attribute all the chief evils which there have been, and which are, indeed, still retained in the dwellings of the poor; and be it observed that the first steps towards improvement were taken, because the real point for attention was allowed to be demonstrated by the assiduous labour in contrivance, of an *honorary* architect. The value of similar *design* in other cases, even in structural features, the public has yet to learn.

But whatever the understood position of the architect, the question of remuneration we still hold to be distinct from that now before us, which is simply—What are the duties which an architect does, or ought to undertake; and of this we shall say more in another article.

A TRIFLE FROM BRIGHTON.

THE restoration of the "Old Church" here, St. Nicholas', under Mr. Carpenter, is proceeding rapidly: parts have been rebuilt: the flint face of all the walls and the freestone quoins have been renewed; and, with the exception of the tower, little of the old structure is to be seen. The rood-screen, a very elaborate piece of carving, has been restored and re-erected, and is now being polychromed, with what effect remains to be seen. The font here is ancient and curious: some have thought it Saxon.

Looking over the town from the churchyard—a striking sight,—you may observe that the tower of St. Paul's Church has been freshly carried up a certain height to receive bells. A sermon was preached there on Sunday in aid of the building funds, which was altogether archæological in character, comprising a history of bells, not very new, and a description of the Temple at Jerusalem. More than one of the preacher's hearers were disposed to think him in error when, in alluding to the clearance of the Temple by our Saviour, he described it as open to the sky. Restricting the term to the sacred edifice itself as described in Kings and Chronicles, their doubts would have been well founded. In truth, however, the Temple was a large area, the top of Mount Moriah levelled, surrounded by walls and buildings. As re-erected by Herod just previously to the event referred to, the Temple was divided into three courts, the outermost of which was appropriated to the people: in the inner court the priests officiated, and then came the Temple proper. Josephus, when describing Herod's Temple, after a glowing account of the first enclosure, says, "and there was another not far off with a stone wall, and some two steps up to it, with a partition of stone; and an inscription upon it, prohibiting any strangers to enter there upon pain of death. This inward enclosure had three gates toward the south and north, of an equal distance one from the other, and to the eastward, another much larger, where men that were purified had admittance with their wives; but the women were not permitted to pass any further. There was another place in the middle betwixt the other two, where it was lawful only for the priests to enter; and that was it where the Temple was erected, and before it, the altar, where they offered up their sacrifices. Now Herod durst not presume to enter into that place himself, because not being a priest, he stood prohibited by the law; so that he committed the care of this part of the holy work to the priests themselves; which they finished in eighteen months, when he himself had been eight years a-finishing the rest." This may serve to satisfy the Rev. divine's fair dissenters that it was not *within the building* that our Saviour "overthrew the tables of the moneychangers, and the seats of them that sold doves."

To go back to St. Paul's for an instant,—the stained glass in the east window, which we have mentioned before, is amongst the most successful of recent works of the kind.

Brighton is certainly an extraordinary place. Fifty years ago it was a small fishing village, and now it is a corporate town with three miles of houses facing the sea, a "pavilion," which represents two or three hundred thousand pounds, a town-hall which cost 50,000*l.* a pier 30,000*l.* a sea-wall of concrete, on which more than 100,000*l.* has been expended; with Churches, benevolent institutions, and charities of most creditable extent, and occasionally nearly 100,000 residents in the town. It is one of the marvels of this country. Three miles of houses, "and all for *spending* money," as a calculating friend of ours said the other day; "and not for making it." Certainly not for making money, and yet it may be a saving to spend it here: sickness and death are more expensive than healthful enjoyment.

Towards the western extremity extensive building operations on the estate of Baron Goldsmid are going on.

At Hove Church, hard by, some stained glass windows have been put up by Hardman, of Birmingham, and Hedgland, of London. We were told, too, of elaborately carved altar and organ screens, by Mr. Baker, but did not see them. We were glad to hear that the Privy Council contemplate closing the burial grounds and vaults in Brighton, on the 1st of June next.

At Old Shoreham Church some works have been going on, including a new roof to the chancel, with coloured decorations executed with discretion. Is the odd crinkum-crankum new window through the buttress here original? New Shoreham Church, of the Norman transition period, as our readers know, wants sweeping. When we last spoke of it, three or four years ago, we mentioned finding a bevy of damsels engaged in rubbing the two brasses which are there. Before they could have done this last Saturday, they must have removed half an inch of dust from off them, collected under that cover-slut matting. The triforium in the chancel here and the wall-arcade are particularly interesting; as, indeed, is the whole building.

If we really should have war, the inhabitants of Brighton will probably remember that in 1545 a French admiral, with a large fleet, made a descent here, and began "to burn and spoil the country." They may, however, console themselves by further recollecting, that on the beacons being fired the inhabitants thereabouts came down so thick and so quick, that the invaders were compelled to fly with loss, and did little hurt. At the present moment the place looks pleasant enough to invite a descent from any quarter: the sea is like a mill-pond, the air balmy and exhilarating, and the far-stretching rows of verandahed houses are sparkling in a glorious sunlight.

THE LATE MR. ARUNDALE, ARCHITECT.

ACCIDENT has led us to delay an expression of the regret with which we heard of the premature death of Mr. Francis Arundale, at Brighton, on the 9th of September last; but we cannot allow the event to pass by without a brief record of the career of one who has laboured earnestly and well, although not in a field likely to produce large pecuniary returns.

Mr. ARUNDALE was born on the 9th of August, 1807. He served his articles for seven years with the elder Pugin; and, on the expiration of the time, accompanied Mr. Pugin in his tour of Normandy; and in conjunction with Messrs. G. B. Moore, Ferrey, and Talbot Bury, made the drawings published as "Specimens of the Architectural Antiquities of Normandy." In 1831 he went out to Mr. Hay, who was investigating the antiquities of Egypt; and made drawings of all the principal remains in that country. This gave the tone to his future life. He afterwards joined Mr. Catherwood and Mr. Bonomi; and in 1833 visited the Holy Land, and made a very large number of drawings and sketches. He was one of the very few Christians who have obtained admission into the Mosque of Omar, built on the site of the Temple of Solomon; and of this he made careful drawings. Altogether he was nine years in the East. When in Upper Egypt he inhabited one of the excavated tombs, where, probably, the seeds of those maladies were laid which afterwards terminated his life. After returning from the East, Mr. Arundale visited Italy, Greece, Asia Minor, and other parts, where he made numerous drawings. He had previously published his journal made in the East, and when in Italy commenced, but did not finish, a reprint of the works of Palladio. More recently, in conjunction with Mr. Bonomi and Mr. Birch, he published a work on Egyptian antiquities, but he had not the art of descending, to popularize, and the sale was small. He had of late years painted several large pictures in oil, from his sketches abroad. Occupied as he had been entirely as an architectural artist, in the first part of his career, he

had not practised as an architect: the only building we know of executed by him, is a Boat-house, in Birmingham, which he designed for Mr. Bowyer Adderly.

We may add that Mr. Arundale was married to a daughter of Mr. Pickersgill, the Royal Academician, who remains with a small family to deplore an irreparable loss, and with this we close our brief notice of an amiable man and an accomplished artist.

LATEST EXCAVATION AT NINEVEH.*

The unmistakeable allusions made in the tablet and memorial of King Sargan to the building of a city increased the zeal of M. Consul Place, and after a conversation which he had with Colonel Rawlinson, on examining the wide expanse of the old city, M. P.'s attention was fixed by a certain eminence and swelling, as it were, of the site. On making an excavation on this spot, he was struck by the finding of a large slab of marble, which was succeeded by others. Further excavation laid bare the four sides of a large hall of 25 m. 10 long, by 20 m. 40 broad, which was completely inlaid with marble. As these were, however, devoid of inscription or sculpture, nothing but the laying bare the floor of the hall will, perhaps, lead to a knowledge of its destination. M. Place has observed several similar mounds between the circumference of the ruined walls, which much excited his curiosity and expectation. The latest discoveries made at Khorsabad have led, therefore, to important results, but their effectuation has cost much labour, as deep cuts were to be made, large tunnels dug, so much so, that more than 4,000 cubic metres of a clayey and compact soil and earth had to be removed on the backs of men. M. P. thence extended his researches to a certain number of artificial hills, or mounds, which lay in a periphery of 10 lieus from Mossul, on the left bank of the Tigris. Successively, thirty of these hillocks were examined, as Bachiccha, Karamles, &c. For the sake of beginning the excavations on the banks of the Zab, where the Chaldæan Catholics had indicated several such unexplored sites, every difficulty resulting from the inundation of the Tigris and the rapacity of the independent Arab tribes was to be encountered. At Karamles two hills were examined, in one of which a floor of alternate layers of bricks, sand, and bitumen was found, similar to those of the palace of Khorsabad. In the other, some octangular marble columns, with entablatures similar to the Doric, were found. M. Place, conjointly with Colonel Rawlinson, thinks that these ruins are of Parthian origin.

But it is also on the left bank of the Zab that of late the existence of similar ruin-bearing hills has been ascertained. The principal are Tell-Chenef, probably also of Parthian origin, Khad-Elias, &c. These lie south-west of Khorsabad; those to the north of that city, like Tell-Giurgor, led to the excavation of vases, gold ornaments, &c. As this hill is very similar to that of Sherif-Kan, where the English have found such beautiful articles of gold, ivory, sculptured basalt, &c. M. Place will continue his researches on it. But the most important discovery has been made at a hill called Maltaï, being one of the range dividing the plains lying beyond the first tier of the Mesopotamian mountains. Maltaï, in Chaldæan, means entrance. Along a rivulet running close by, rises a steep mountain, with long rows of perpendicular rock, resembling walls built by Nature. On one of these rock-walls, large bassi-relievi are incised, containing thirty-two figures, 1 m. 33 in height. They comprise three compartments, and represent persons standing in rows, and holding in their hands the staff of command, crowns, or rings, branches of trees, &c.; they are seated on the backs of animals, bulls or lions, *not* resembling those of Khorsabad, as they have neither wings nor human heads and tiaras.

The hill of Bavian, north-east of Khorsabad, possesses also, like that of Maltaï, a number of these bassi-relievi cut in the rock. They are undoubtedly the work of Assyrian artists, and amongst them is, nearly on the top of the hill, a sculpture, divided into nine compartments, representing the images of Assyrian kings, of natural size, and which resemble those represented at Khorsabad. Four of these figures, being out of reach of destruction, are in a beauteous state of preservation; and these images incised in the very rocks of the mountains present a huge, mystic aspect, and appertain eminently to a primitive race of men. Similar monuments of the Parthians and Persians are only imitations, made after these Assyrian prototypes.

Having, in fine, returned to Khorsabad, and for ascertaining what lay behind the beforementioned double row of columns and terraces, a long *trenchée* was opened, which soon conducted to a wall, 5 feet high and 21 feet long, which was completely covered with painted and enamelled bricks, in a well-preserved state. This kind of mosaics represents divers subjects, in which human figures, beasts, and plants, are depicted. These were the first Assyrian *pictures* hitherto discovered; and it is the more interesting, as they can be connected with another recent discovery of M. F. Fresnel, made on the site of old Babylon. *Ktesias*, in his description of the Palace of Babylon, mentions some pictured bricks which adorned the walls of the building. They represented scenes of the hunt, as also mentioned subsequently by Diodorus Siculus. When M. Fresnel examined the mounts of *débris* of the palace of Nebuchadnezar, he discovered a number of painted enamelled bricks, which seemed to be the remnants of the pictures alluded to. They exhibit parts of wild animals, tails and paws of dogs, lions, panthers, &c. The paintings discovered by M. Place possess great analogy to those Babylonian art-works of Ktesias and Diodor. Both prove, that with *primitive* nations, painting (and sculpture) were of a purely decorative character; and that it was only the nations of a subsequent civilisation who individualised these art-works, for placing them anywhere that occasion might require.

* See p. 69, *ante*.

FOREIGN ARTISTIC INTELLIGENCE.

Vienna: Remodelling of Art-Unions, &c.—The art prospects in the Austrian empire are of the most discouraging nature, and it is only the so-called "Austrian Art-Union" which exhibits some signs of life. It has of late compiled some new laws and regulations, which have been submitted to Government for approval. The so-called masters schools, as well as the preparatory school, of the Vienna Academy of Arts will have now an occasion to exhibit their capabilities, as the paintings and ornaments of the Lerchenfeld Church have been entrusted to the professors of the Academy and its pupils. Drawing and modelling have been introduced in the industrial schools (*Industrie Schulen*), which may be called the acme of Austrian educational establishments. The architectural activity at Vienna is of the same stagnant character, as the new barracks of the Biber bastei can be called at least only utilitarian. The restorations are of greater import, as, for instance, that of the Tirna chapel of the cathedral. The best, however, is that of the old chapel of Castle Grafenegg, a jewel of gracefulness, taste, and colour-brilliancy of the rich style of the beginning of the fifteenth century. The exhibition of the Austrian Art-Union for January comprised seventy-five works, amongst which a picture of M. Czermak, of Prague, representing the once poet-laureate of Emperor Rodolph II. begging on the bridge of Prague, attracted considerable notice.

Cologne.—Utilization of Sweepings and Refuse.—A company has been formed here for the establishing of a great *poudrette* manufactory (*noir animalisé*). The vast quantity of manure required now for agricultural purposes, makes such an establishment one of great import in all large cities.

Album of the Paris Literary Fund.—For the sake of being able still more to assist indigent authors, the *Société des Gens des Lettres* has decided on the publication of an album; the whole proceeds to be devoted as grants to supplicants for aid. M. Milhaud, of Paris, has already purchased the copyright for 10,000 francs.

New York Crystal Palace.—Amongst the 675 oil paintings exhibited, 140 were German and sixty-five from Düsseldorff; which latter were much valued by the Yankees, and those of Hassenclever (now dead) were those most sought after.

Art in the Black Sea.—M. Durand-Brages, the well-known French marine painter, has been sent to join the French fleet in the East, for perpetuating by his brush the naval deeds which may happen there.

Prof. Liebig.—The King of Bavaria has confirmed a decision of the chapters of the Maximilian Order for Science and Art, nominating Baron Liebig chairman of the chapter of that order.

Care for fine Paintings.—Although the restoration of the two masterpieces of Rubens, "The Descent" from and "The Exultation of the Cross," at Antwerp, had been restored with perfect success, the Minister of the Interior (incited, probably, by some proceedings elsewhere), has named a commission, consisting of the painters, Messrs. Navez, Gallait, Wappers, &c. for examining and reporting on the present condition of the fine-art works.

INSTITUTION OF CIVIL ENGINEERS.

TIDAL WORKS.—LOCKS.

On the 7th inst. the paper read was a "Description of the Navigation and Drainage Works recently executed on the Tidal Portion of the River Lee," by Mr. N. Beardmore. The first part contained a general description of the ancient navigation of the river Lee, and of the gradual improvements introduced into the class of barges frequenting it, and the burthens carried by them. Allusion was made to the difficulties and continual delays which had prevailed up to a very recent period in the tidal portion, forming the junction with Bow-creek and the Thames, at Limehouse; difficulties which were aggravated by the navigation being the common supply for five tidal mills. The new works consisted of stop-gates, across the main channel of the Lee, near Old Ford-lock, established for preventing the water from being drawn down by the tidal mills to the eastward; also a lock for a similar purpose and to pass barges on St. Thomas's-creek, near Bow-bridge; and a new overfall, to pass surplus water to the Three Mills. Three large new flood-gates, each 18 feet in width, were constructed near Four Mills, with a new tidal lock, adjacent to the spot, in order to pass vessels into Bow-creek; the ancient system being to pass craft by a single pair of gates, only available by drawing down the head water, and frequently, during neap tides, the water did not rise high enough to enable the gates to be opened at all.

On February 14, (Mr. James Simpson, president, in the chair), the paper read was "On the Principles and Construction of Locks," by Mr. A. C. Hobbs.

The author's object was to give a brief review of the mechanical principles involved in the construction of locks, and the degree of security hitherto achieved by manufacturers.

The paper commenced by asserting, as an axiom, that the highest point of security to be attained in the construction of locks, must consist in the fact, that the possibility of picking or opening them, without their true keys, should depend entirely on chance; and that notwithstanding the immense variety of locks already invented, there were really but three absolutely distinct principles involved in their construction,—so classed without reference to dates and for convenience of description. The first principle included all locks having a series of fixed obstructions, or wards, in and about the key-hole, to prevent any instrument, except the key, being turned in the lock: this principle was shown to be inefficient, however complicated the construction might be, as the wards themselves afforded the means of ascertaining the form of key required to open the lock.

The second principle was that of the letter, or puzzle-lock, which appeared to carry out the principle or doctrine of chance to the fullest possible extent. But in this case, also, a method was shown, by which the lock could be opened as easily as in the former; proving that the inventor of that class of lock had failed to accomplish the object of producing a fastening whose security was dependent only on mere chance.

The third principle, or last class of locks, included all those possessing a series of moveable

pieces called slides, pins, tumblers, &c. placed within the case of the lock, and which pieces must be operated upon and moved into certain given positions, by a key, before the bolt could be shot. This principle was illustrated by descriptions of the Egyptian lock, the Bramah lock, the inventions of Barron and of Bird, the Detector of Mitchell and Lawton, and the later improvements of Chubb and Cotterill (of Birmingham) and others. Allusion was then made to the great reliance which, until recently, had been placed on these locks, and an explanation was given of the principle, on which all locks of this description, could be as easily picked as their predecessors. (?)

The author then commented on the necessity of devising some simple and effective means by which the defect, common to all the above locks, might be remedied, without adding materially to the cost. This desideratum he had endeavoured to secure, by the introduction of what was called a moveable stump, which projection, instead of being rivetted into the bolt, was fixed to a piece, moving upon a centre, or pin, at the back of the bolt. The action of that piece was such as to render it impossible to ascertain the true position of the tumblers, for, on any pressure being applied to the lock for that purpose, the stump, by its motion, locked the bolt, and left the tumblers at perfect liberty. The author stated his conviction that this apparently slight alteration rendered it impossible to open such a lock, except by the mere chance or accident of a key fitting it; there being no possible means of ascertaining the form of key requisite to open it surreptitiously. Since the introduction of this lock, several attempts had been made to produce the same result, without actually copying the original, but with very little success.

An additional principle of security, devised in America, was then pointed out, in the celebrated permutating bank lock, invented by Robert Newell, of the firm of Day and Newell (New York). Previous to the introduction of that system, permutating keys had been used, but they required that the lock itself should be altered, to suit any new adjustment of the bits of the key, whereas, in the American lock, the key alone, being altered, produced by its own action, the corresponding arrangement in the lock: by this ingenious contrivance, the person using the lock became his own lock-maker, and was able to render the key useless to any other person, by a simple change in the bits, after locking the door. Such locks, whose numbers of permutations varied from 720 to 479,001,600, according to the number of bits in the key, were intended principally for strong rooms of banks, and other establishments where large amounts of property were deposited; they were, therefore, comparatively expensive, and were necessarily of larger size than locks required for ordinary use.

METHOD OF MODELLING IN PLASTER FOR SCULPTURE.*

THE tools used are:—

1st. *Trowels*, the handles of wood, the blades of gutta percha, set in metallic backs or sheaths. These are of various forms and sizes, and, being elastic, the plaster can be put on with them somewhat as with a brush.

2nd. *Chisels* of various shapes and sizes.

3rd. *Scrapers.*

4th. *Perforated or open files*, every tooth having an opening in front of it through the body of the instrument, so that the filings or dust may pass through and escape from the outer side, thus leaving the teeth unclogged and free to act. A common file or rasp would soon fill, and cease to act upon the plaster. The open files are of various forms and sizes,—curved, rounded, flat, &c. They are made of steel or of hoop-iron, and by a machine which punches the holes at the same time that it raises the teeth. The form is given to the file after the holes and teeth have been made.

Having the tools, the material must be prepared, and this is common plaster of Paris. Suppose the work projected is an erect statue, the process is as follows:—A pair of irons corresponding to the bones of the legs in direction, though not necessarily in shape, must be set up on a platform, rising nearly as high as the hips, with the lower ends bent sideways in order to have a good anchorage in the plaster which is to form the base of the statue. Around these irons the base is commenced by pouring a sufficient quantity of mixed plaster to form it. We have thus before us a platform of plaster, with a pair of irons standing in it. The statue must now be built up with *bricks* and *mortar*.

The bricks are made of plaster, and the mortar is plaster and water.

The bricks are made by laying down a piece of oil-cloth upon the floor and pouring upon it a quantity of plaster, made liquid with water. So soon as this begins to harden, it must be scored, like short-cake, so that when quite set or hard, it may be easily broken into many fragments of various shapes and sizes.

Having a quantity of these bricks on one side and a barrel of mixed (fluid) plaster on the other, and a trowel in the hand, the work is commenced by sopping a brick in the fluid plaster, and placing it against the base and side of one of the irons; and then another and another, filling in the crevices with plaster-mortar. Thus the work goes on, until the body is reached, when it is continued in the same way, except that a cavity is left in the centre, to be closed at the neck, which is made solid, and re-opened in the head.

Having the figure (legs, body, and head) up, the chisels are now to be used in roughing it into the general human shape. This done, the arms are to be added. A long *brick* is sopped at one end in fluid plaster, and placed against one shoulder. It soon adheres, and forms the nucleus of the upper arm. To this is added another long brick, to form the fore-arm. Additions are then made to fill the arm out. The whole is now gone over with the chisels, taking off here and adding there, as may be found necessary, until the chisels are no longer required. Then the open files come into play. They act like planes, and soon produce even surfaces, taking off all irregularities. The trowels are still useful in filling up cavities and making slight additions. Small brushes are useful when very little is to be added.

It is necessary to cover the bricks entirely with a coating of plaster, for otherwise they will appear, and disturb the harmony of the surface. The surface, moreover, should be kept quite clean, else the plaster will not adhere. It should always be brushed before putting new plaster on, and, in case the work has been laid aside for a long time, the whole surface must be scraped or filed before beginning anew; otherwise the plaster will not adhere firmly.

If an alteration be desired in the position of the head, the arms, or even the body, it can be made by sawing the parts in two, and then re-uniting them by forcing fluid plaster (with a syringe) into the fissures. The arms can be taken off and finished separately, putting them on from time to time to see the effect.

It is unnecessary to keep the model wet: the dryer it is the better.

There are other details of the process which would require too much space to specify.

The advantages of this process of modelling over the clay process are numerous: I will mention a few of them.

The plastering is unchangeable: it neither shrinks nor swells; and it does not require wetting and covering with cloths or oil-cloths, to keep it intact and in order.

No moulding is necessary to transfer the form from clay to plaster. The model for the marble is not a cast; but the plaster-figure, as it came from the artist's hands, is itself the model.

The process is less tedious than clay-modelling, for by means of the *open files* more can be done with plaster in a day than with clay in several days.

A clay model cannot be changed materially after it has once been commenced; for the iron skeleton which sustains every part of it is a fixture. But in the plaster-model, the iron framework is only in the legs: all the rest can be cut apart, and varied from the original design in accordance with any afterthought of the artist and this is a very great advantage.

Modelling in plaster is not new, but my way of doing it is new; at least I know of none who have done it, if I except such as have been instructed by me. But my method would offer very little advantage over the old way of working in clay, were it not for the open file, an instrument quite new and of my own invention. It is made by a machine constructed by me for the purpose, and which produces them rapidly and with very little manual labour.

In Florence there are models of statues several hundreds of years old, done evidently in plaster, but roughly done. The difficulty always has been to *finish* a plaster-model. By my method, and with my instruments, the highest finish can be obtained with ease.

HIRAM POWERS.

* We have received the following description of a method of modelling in plaster adopted by Mr. Hiram Powers, from a friend of the sculptor.

THE NEW CRYSTAL PALACE AND "PRACTICAL ART."

LECTURES have lately been delivered at several institutions on the building at Sydenham, on the principles of "Practical Art," and the Beautiful in Decorative Design and "Art-Manufacture," and on "The Laws of the Science of Colour, in relation to the Decoration of Rooms, to Furniture and Dress," by Mr. Edward Hall, F.S.A. Illustrated by diagrams, and specimens of manufactures. In the course of his description of the project of the Crystal Palace Company, the lecturer endeavoured to show the real origin and the history of the Exhibition of 1851, and of the building in Hyde-park. He strongly urged that the influence of so remarkable a collection of the works of Nature and Art, as that to be displayed at Sydenham, was of national importance, not only in regard to education, but by the elevation of the standard of morals which it would effect, by supplying the place of inducements to low vices—those inducements which existed in mere deference to the necessity for some relaxation or other—which, however rightly to be purchased by labour — was yet a natural desire. In the other lectures, he explained the general principles of form and colour, attaching the chief importance to the structural principle exhibited in all good architecture. At the London Mechanics' Institute, the lecture theatre itself afforded a good opportunity for illustrating certain errors in design, such as iron columns in imitation of Sienna marble, and mouldings with a niche and figure, represented in paperhangings; as also some of the arguments in proof of the universal desire to express the beautiful, even in the commonest forms of fittings and furniture. The lecturer thought that the well-directed exertions of the "Department of Art" would fail, unless seconded by self-education amongst those who make the demands which have to be supplied by the manufacturer. In the course of the lecture on colour, he referred to "colour-blindness," as explanatory of some of the difficulty often felt in comprehending the science, and on which point a letter by him had appeared in the *Builder*.

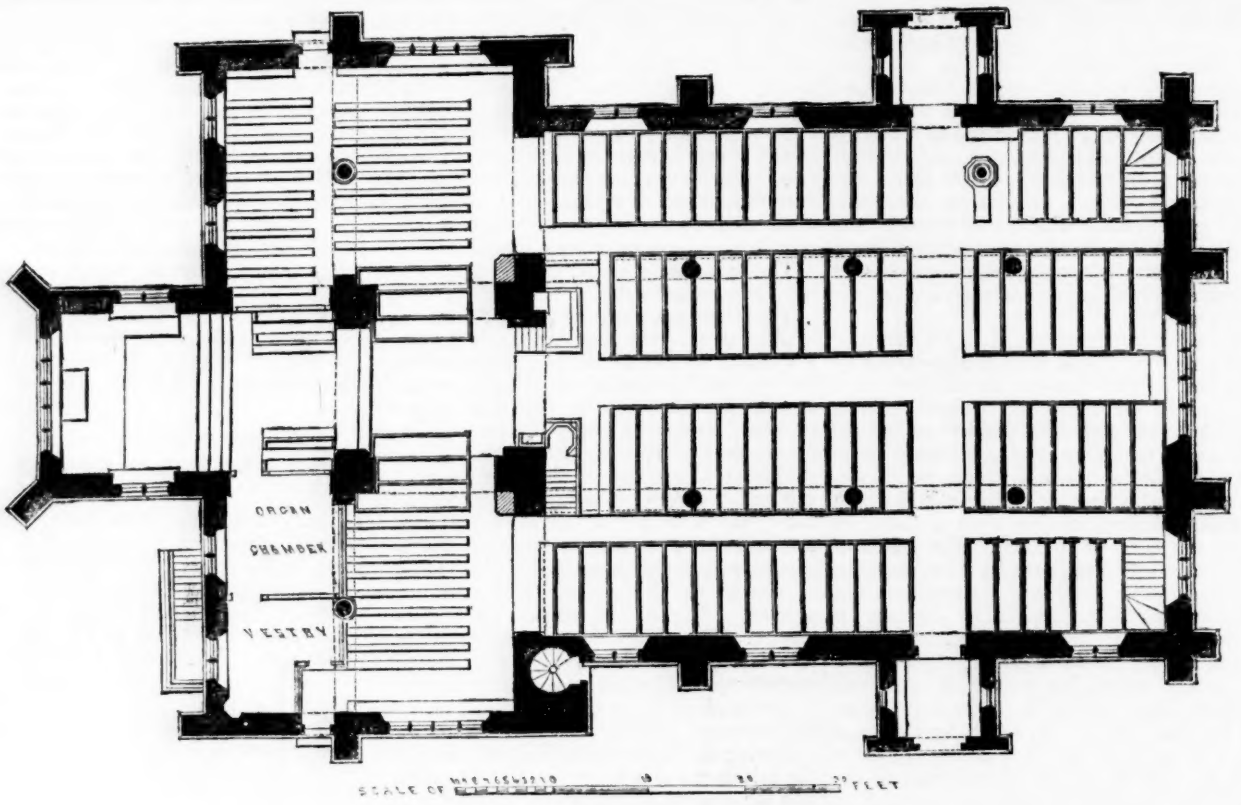
STAINED GLASS AT MARLBOROUGH HOUSE.

HAVING seen in the museum at Marlborough House the other day some painted glass exhibited as "the mode of execution described by Mr. Winston with reference to picture glass paintings," I wish to ask, through the medium of your Journal, whether Mr. Winston considers this as a work of art fulfilling the best conditions of a glass painting, or conceives the composition, drawing, or handling to be equal to the well-executed and masterly figures so often met with in cinque-cento glass paintings? This subject has of late engrossed so much attention that it is desirable to know, for the guidance of the public, whether this is the painted glass advocated by one presumed to be an authority in these matters. H. C. G.

*** We submitted the inquiry to the gentleman in question, and append his reply:—

"Allow me to assure your correspondent, 'H. C. G.' that I have never seen the painted glass to which he alludes, nor have ever expressed any opinion respecting it, nor have ever authorised any one to couple my name with it in any way whatever.

"C. WINSTON."



PLAN OF COCKERMOUTH CHURCH.

COCKERMOUTH CHURCH.

COCKERMOUTH CHURCH, after much local contention since the fire, to which we alluded at the time, has been rebuilt, and is now very nearly completed. The plans of Mr. Joseph Clarke, of London, were adhered to by the committee; and the cost, we understand, has not exceeded the original estimate of 4,500*l.* The east window has been filled with painted glass, by subscription amounting to 300 guineas, as a memorial to the poet Wordsworth, who was born in the town, and educated as a child at the grammar-schools, in the church-yard. Various other windows are promised. The convenience of the railway was brought to bear on the materials; and as it was found difficult to procure the local free-stone, the grit from Prudhoe, in Northumberland, has been used for the greatest part of the church. This, with the blue lime-stone walling, forms a good contrast. An organ, by Bishop, and a heavy peal of eight bells, by Mears, will be put up, as soon as the church is fit to receive them.

PROVINCIAL NEWS.

Lynn.—As the tenders for building the new Corn-exchange here greatly exceeded the estimate of the architects, the committee of the corporation would not accept any of them without the sanction of the council, who resolved, however, that the work be immediately proceeded with, and the lowest tender, namely, 2,450*l.* was accepted, being that of Mr. Philip Edmunds, of Lynn.

Bury.—The twenty designs sent in for the covered provision-market are hung up for public inspection in the Town-hall.

Colchester.—The exterior and interior of Wivenhoe Church are about to be renewed, at an outlay of 2,000*l.* Amongst the principal subscribers are Mr. J. G. Rebow, 500*l.*; Mr. N. Corsellis, lord of the manor of Wivenhoe, 300*l.*; Rev. E. T. Waters, rector, 100*l.*

Ipswich.—A monument has recently been erected in the Church of St. Mary-at-Tower, in memory of the late Rev. J. G. Hawkins, B.A. by his pupils. The monument consists of an arched recess in the masonry of the wall, immediately above the sittings appropriated to the pupils of the grammar-school, surmounted by a canopy springing from carved bosses. Within the recess is a brass bearing the inscription. The design was by Mr. R. M. Phipson.

Wisbech.—The harbour here is to be deepened, and the banks of the Nene to undergo a thorough repair. Mr. Leather is the contractor, and the estimate of the present work is about 120,000*l.*

Trumpington.—The church of this place has been lately restored in the interior and reseated. The stonework has been cleaned from white-wash and plaster, repaired and refaced by Mr. Tomson, and the area filled with new seats by Mr. Rattee. The memorial window erected by Mr. Litchfield, and executed by Constable, is also a new feature.

Oxford.—A "delegacy" has been appointed to consider the question of erecting a museum, with particular reference to the principle of constructing a building surrounding three sides of an area, which should be covered in and applied to the purpose of a general museum, receiving light from the roof. The fossils, minerals, and shells, collected by the late Admiral Harvey, have been received from Edinburgh.——The president and fellows of St. John's College, have voted 1,400*l.* for filling the remaining windows in the chapel with stained glass.

Crewkerne.—The parish church of South Perrott, near this town, has recently undergone considerable reparation, under the supervision of the rector, the Rev. John Wills. Among recent improvements is the introduction of stained glass in the chancel window. This window is of three lights, with trefoiled cusps, surmounted in the heading by two quatrefoils, under a circular (but once a pointed) arch. The three lights, which are filled with lozenge panes of ground glass, with *fleurs-de-lis*, display three circles in colours, representing the birth, last supper, and crucifixion of the Saviour.

Ruthin.—The gas directors here have unanimously resolved that the manufacture of gas upon the hydro-carbon principle be totally abandoned as soon as circumstances will permit the removal of the present retorts and substituting others in their stead.

Bingham.—The tender of Mr. Ralph Wharton, of Nottingham, for the completion of the entire works and plant required to light up the town of Bingham with gas, has been accepted. Mr. Jatland, of Nottingham, is the engineer.

Richmond (Yorkshire).—The inhabitants of Richmond propose to have the ancient castle of Richmond restored and adapted to the purposes of a depôt for the arms and stores of the West Riding Militia. A memorial has been presented to the Duke of Richmond, the owner of the ground enclosed within the walls of the castle, declaring the wish of the inhabitants, and requesting his grace's permission to that effect. The council of the borough have also made a like request.

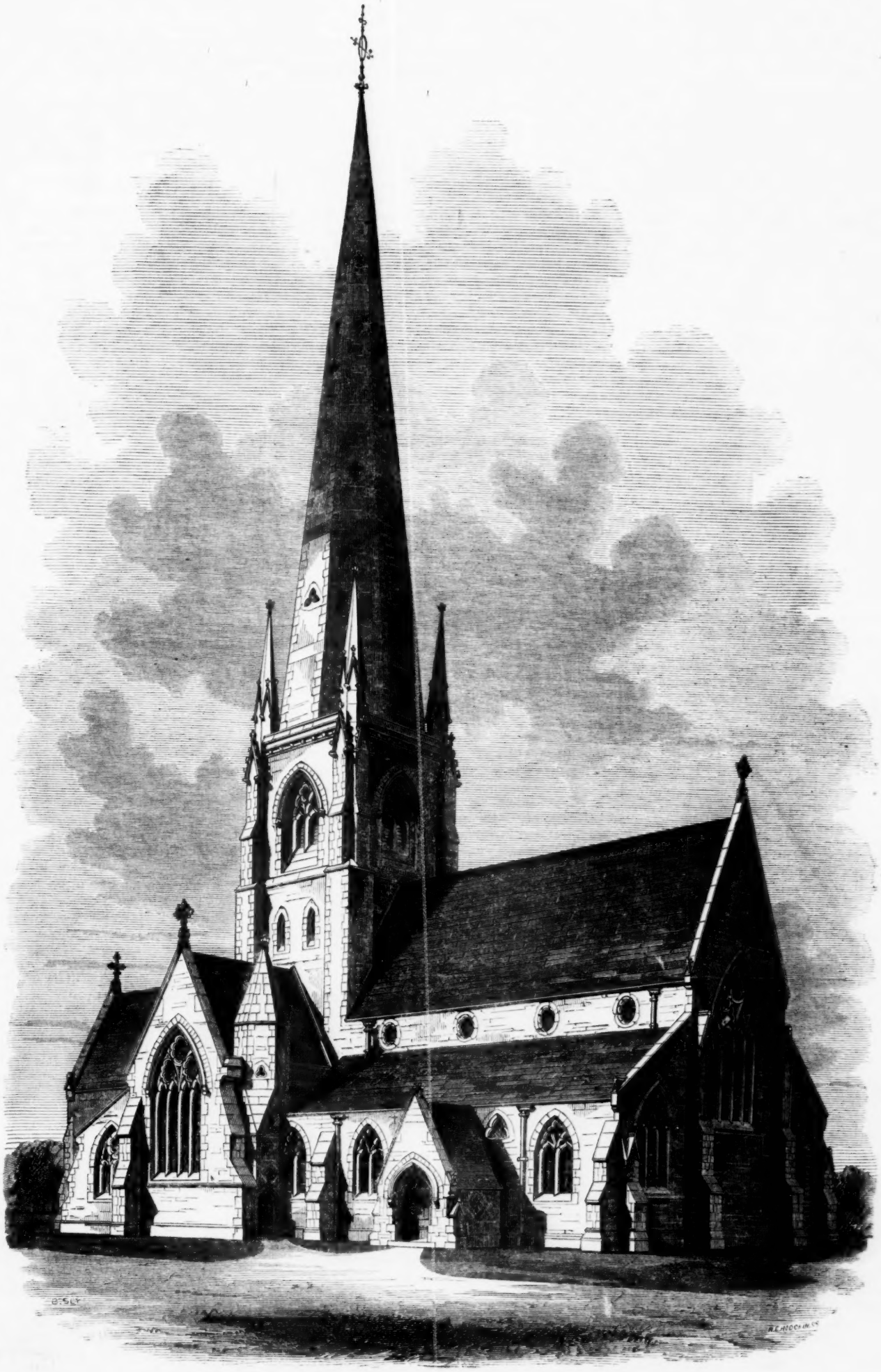
Barnsley.—Out of seventeen designs for Salem Chapel, four have been selected in the meantime by the building committee from which finally to choose.

Peterborough.—The beautiful stone organ-screen erected by Dean Mont, in Peterborough Cathedral, is about to be removed to the west side of the transepts.

Lowestoft.—The contract for the erection of a new railway station here has been taken by Messrs. Lucas, Brothers. The building will contain the ornamental with the commodious. It will have an eastern and northern frontage. The roof will be of sufficient span to admit a cab-stand beneath it, and will be also carried about 50 feet farther west; and the platforms, while they will be considerably wider than at present, will be carried double the length. The necessary offices will all be upon the same enlarged scale.

REBUILDING OF DONCASTER CHURCH.

THE contract for the mason's work is made. The total amount to be paid by the committee is 19,520*l.* of which 3,430*l.* is for the tower above the level of the top of the roofs. The contract for the stone work of the South Chapel, which Mr. Forman had taken upon himself, is 1,780*l.* We learn from the *Doncaster Gazette*, that there will be a reduction from the amount to which the subscriptions are applicable, in consequence of the discovery of larger blocks of stone in Mr. Wrightson's quarries, and the use of Mr. Woodyeare's stone in the place of a more expensive stone which was originally contemplated. It is hoped that the saving from these alterations may amount to not less than 1,000*l.* If this be so, it seems that the entire expense of the foundations and stone work, including the architect's commission thereon and the other incidental expenses up to that point, will not exceed 22,000*l.* It should be stated that this contract is from the ground level. The contractor is Mr. Charles Ireson, the younger, of Northampton. There was considerable difference in the tenders. One of them reached the sum of 43,000*l.* and the next above Mr. Ireson's was about 3,500*l.* more than the amount of his contract.



COCKERMOUTH CHURCH.—MR. JOSEPH CLARKE, ARCHITECT.

NEWS FROM IRELAND.

GRANTS have been made by the Commissioners of National Education for building and furnishing seventy-five schoolhouses. Some have been in progress of building and will shortly be completed: others are only lately commenced. Two model schools have been opened, one at Athy and the other at Galway: the former has a model farm attached thereto. Preparations for district model schools at Waterford, Limerick, and Kilkenny have commenced, and two additional district model schools are proposed at Belfast.

A new church is to be built at Cong, Galway.

The Cork Athenæum, in progress of erection at Camden-quay, near the Royal Cork Institution, will afford sitting room for 2,900 persons. The general dimensions are 165 feet by 54 feet. Sir John Benson, architect.

Lord Cremorne is about to erect a church at Rockorry, county Monaghan. Mr. W. J. Barre, Newry, architect.

The model lodging-house agitation is daily gaining ground in Dublin, and it is a very generally and earnestly expressed desire that ere long many of the well-known "rookeries" may be razed, and comfortable, clean, and well-ventilated habitations provided for the poorer classes. That the lower order of the Irish only require to be spurred on to improvement of their condition, has been fully established by the experiments already made, and if the arrangements of the working committee be based on a good principle of organization, we entertain no doubt of their success.

Lord Stuart de Decies has contributed 150*l.* towards the erection of a new church at Ballynoe, and we hear that several other donations have been received, which have placed the project on a firm footing.

A new masonic-hall is to be erected at Armagh, and on the occasion of a late anniversary meeting, a set of plans and donation of 5*l.* were presented by Mr. McCurdy, architect, Dublin.

A new church is to be built at Silvermines.

At Roundtown and vicinity building operations promise to be brisk this spring, and we also hear of projected improvements at the north side of the city, in places hitherto almost uninhabited. The recent severe weather has almost totally suspended all building works.

At a late general meeting of the Royal Institute of Architects in Ireland, Mr. Jacob Owen, V.P. in the chair, Mr. J. H. Owen read a paper on dampness in walls, and suggested means for preventing this annoyance, which caused some discussion among the members.

Galway promises to be busy when the season sets in. At Oughterard new schools are to be erected, and at Clifden a new convent and church. The ordnance barracks will most likely cost about 75,000*l.* and engage a large number of hands.——The Brannock lighthouse in course of erection is far advanced. Mr. Halpin, the inspector, and Mr. Crowe, of Dublin, the contractor, had a narrow escape from drowning by the upsetting of a boat. Several other works are spoken of.

THE "BLOOM" ON ROMAN CEMENT

A SANITARY QUESTION.

ON page 41 of your journal, a correspondent, "Inquirer," has brought forward an interesting question of sanitary importance, though, if I understand his remarks correctly, he is certainly not aware of it.

The complaint is, that when Roman cement is applied to the outside of houses, and then painted either with white lead or with the oxide of zinc,—a black bloom comes through, sometimes within six weeks, and at others not for as many months; and he wishes to be informed if he may expect a recurrence of the evil after he has repainted the houses now affected by it. He seems to consider that the evil is in the cement, caused by some process of the manufacture, and limits the period of the complaint to the last four years.

I understand by the words "black bloom," that very disagreeable appearance which is seen on the exterior of many houses, and is of rather common occurrence: if your correspondent means the same, he certainly may expect its return after repainting, for the fault does not, I consider, lie in the cement, perhaps not in the paints,—you will perceive he has used *both* kinds, but most assuredly it is caused by bad drainage. The complaint is not new: in fact, it is now becoming rather old. It is one of the main points to which I direct my attention when surveying houses for my clients. Should there be the slightest appearance of it, I first look for any sewer grating in the street, opposite or near to the house; when, if there be, I bring that objection strongly before my client; but if there be not a grating, and he feel otherwise satisfied with the premises, I always insist upon the drains being put into perfect order before the lease is taken. Your correspondent, from these remarks, will judge how to proceed.

Having often had this subject in mind, I have observed that the bloom is most frequently to be found in streets running north and south or nearly so; and in most perfection on those houses opposite to, and within one or two of, the sewer gratings. The streets where this bloom is worst have generally bad sewerage; consequently the drainage of the houses is bad, and consequently the other houses, though not near the gratings, are more or less affected. The bloom is seldom to be met with in the streets of the City: it is frequently seen in the streets built during the eighteenth century, and is most common in those recently erected in the suburbs and low localities. This bloom is readily washed off, and it is curious to mark the effect which the rain has upon a house where, as in many instances, the balcony of the first floor having prevented the rise of the vitiated air, the paint around the top of the ground floor window has become quite dark; but at the sides a sloping direction is taken, being the portion the rain could touch and wash away, and from the same cause the bottom portion, under the window, becomes lighter in colour.

The worst examples that I have lately seen are some houses at the top of Gower-street, on the same side with, and adjoining to, the playground of the London University School. The ground floors of four houses are stuccoed and painted, and the whole was covered with this bloom of a darkish colour. One of the four has lately been washed or painted, making the three appear very much worse.

In the same number, p. 46, there is an editorial note under the head "Purification of Gas," asking whether the snow, said to contain sulphuric acid and ammonia, which has lately fallen in London, could be the cause of the curious deposit on the painted stuccoed fronts of many houses. Though I presume this has reference to the same bloom which is the subject of my remarks, not being aware of two kinds, I must leave the solution of your question to other hands.

WYATT PAPWORTH.

P.S. Since writing the above, a friend has informed me that native sulphate of barytes is largely used to adulterate *white* lead (query, if applied also to *zinc* paint): the air acting upon it produces a dark grey or bronze tinge: but this would be *in* the paint, not *on* it. A question which I should like answered is, whether a black efflorescence from cement *through* paint, like moss, is caused by ammonia, for nothing seems to cure it.

VULCANIZED STONE.

A FRESH invention has been patented for hardening the soft stones of the country. Specimens have been exhibited of great hardness, susceptible of high polish, which preserve a sharp arris, and are stated to be proof against the alternations of our climate, and to withstand not only the London atmosphere, but even the action of the strongest acids. The proprietors allege that, by a solution, chemically prepared, and laid on with a brush in dry weather, the decay of old buildings may be arrested; and the material acted on, whether stone, compo, or brick, be made perfectly non-absorbent.

The specification says,—"It is proposed (in all cases where it is practicable) in applying any indurating mixtures to enclose the stone or other materials to be operated upon in an air-tight chamber, and exhaust, or partially exhaust, the same, and then allow the indurating substance, whether hot or cold, to trickle down, or flow into the chamber, to fill the vacuum, the effect of which will be that the liquid indurating substance will readily find its way into the pores of the stone or other material, and become incorporated therewith.

Mixture No. 1.—The composition of this solution is as follows:—56 parts by weight of sulphur, dissolved by the aid of steam heat, or dry heat, in 44 parts of dilute vinegar, or acetic acid, containing 17 parts of acid to 8 of water.

In preparing indurating mixtures to be applied to the exteriors and interiors of buildings, whether possessing a surface of brick, stone, cement, or plaster, I employ the following ingredients:—Shellac, 14 parts, by weight; seed lac, 14 parts; coarse turpentine, one part; pyroligneous spirit, 40 parts;"—and other mixtures.

ST. GEORGE'S HALL, LIVERPOOL.

THIS building is approaching completion. The great hall, which, with the exception of the organ and the flooring, is in a finished state, measures in extent 169 feet long, 77 feet wide, between the gallery fronts: it is 82 feet high to the crown of the arch, and contains accommodation for 5,600 persons. It is divided into five compartments, by columns of polished granite, from which springs the vaulted ceiling. Each compartment forms a recess, extending over the corridors adjoining the hall, forming lunettes, which form galleries for the accommodation of spectators. In each recess will be suspended chandeliers. The main ceiling, which, as our readers are aware, is constructed of hollow bricks, is now adorned with octagonal and other panels, in which are displayed, in bold relief, the armorial bearings of the royal family, the Corporation, the Palatinate, and the patron saint, St. George, all highly gilt, and represented in natural colours. The spandrils of the main arch are filled in with allegorical figures of colossal size, representing severally Art, Science, Justice, Temperance, Fortitude, and Prudence. The gallery fronts form a balustrade of elaborate workmanship. The organ will be erected on a raised platform, supported by granite columns, now ready for its reception. It will be fixed in the north end. The lower part of the hall, under the gallery fronts, is finished in solid stone, in which are disposed the six entrance-doors, three on each side. There are niches for statuary, and panelling, filled in with slabs of various coloured marbles. The entrances to the hall will be fitted up with ornamented bronze doors, containing perforated ormolu panels. The flooring will be composed of Minton's tesselated pavement: the preparations for laying this are now nearly ready. The whole of the ornamental plastering has been executed by Mr. Jones, of Mount-pleasant; and the gilding and painting by Messrs. Troutbeck, of Liverpool. The platform for the organ and the stonework round the hall have been executed by Messrs. Cubitt, of London.

SCENERY OF THE STAGE.

Haymarket Theatre. — For Mr. Palgrave Simpson's neat and pointed adaptation of *Un Mari qui se dérange*, produced here under the title of "Ranelagh," two new scenes have been painted, an apartment in the house of Sir Robert Rovely, by Mr. O'Connor, and Ranelagh-gardens in the time of George II. with its alleys, its rotunda and boxes, by Mr. Morris. They are both entitled to commendation. The apartment is exceedingly well fitted up, with carved chimney-piece, wall-hangings, oaken cabinet, and other furniture to correspond: the general effect warm and solid. The view of Ranelagh-gardens prompts to a gossip about all the changes in the site, but we will withhold it for another occasion. Mr. Buckstone, Mr. Vandenhoff, Mrs. Fitzwilliam, and Miss Reynolds play the principal parts, and the piece is a success. Those who have seen the pantomime here (a very excellent one) must have noticed the peculiar extent and completeness of the traps in the stage. A few particulars, one of these days, may be useful to some of our readers likely to be employed on similar constructions.

Olympic Theatre. — Although "The Love

Lock" will probably not be played again (and we much regret its failure, as well for Mr. Wigan's sake as because, being an original piece, such an occurrence tends to lead managers to adhere to adaptations from France), it would be unjust not to mention the admirable scene, "A street in Silberberg," before which the introduction is played, even if we say nothing of the acting of Miss P. Horton, Mrs. Wigan, Mr. Emery, Mr. Robson (as the *old* man only), and Mr. Wigan —the latter especially. The scene represented is one of those German towns, with its inn, its cross, and its mountains, with which we have all been familiar, and was painted with skill and a clean brush.

AN ARCHITECT'S START.

AN architect, well and honourably known to many of our readers, is publishing his memoirs in *Bentley's Magazine*. The account of his first start in life is amusingly put. If you wish to judge for yourself, here it is:—"My kind benefactor, H. B. having invigorated me with a week's breathing of the bracing air of Hampstead-heath, and the cheerful tone of my mind being restored by the lively but sympathising socialities of his family, he thus addressed my no less astonished than grateful apprehension:—'W——,' said he, 'to show you the confidence I have in your future success, as my only, but all-sufficient, security, I propose to become your banker, with an advance to the amount of 300*l.*; and, to relieve you from all sense of obligation, you shall hold yourself liable to pay me interest at the highly remunerative rate of five per cent. for the whole, or for as much of it as you may require. Engage, instantly, apartments of a respectable official character, in a good professional locality. Put a brass plate on your door, announcing 'Mr. W——, Architect.' Get your views of the Roman Ruins handsomely mounted: obtain an estimate for having them well lithographed, and for the printing of a suitable accompanying letter-press: let one lithograph be immediately prepared, and have something more than the full number of required impressions taken. By showing the drawings and the sample print, obtain as many subscribers as you can from the profession and other influential persons. So much of your time as remains unoccupied by conducting the publication of your pictorial work, and in filling your subscription list, you will of course give to (at least apparent) professional work in your office. Seek work—and, if you can obtain it, *make* work. Let those who come to see your Roman Views, and to enter their names as subscribers, find you occupied upon plans for things,—you know what,—town halls, and churches, and literary institutions, and national academies. Look out for advertisements "to architects:" try for premiums, and never mind not obtaining them: meanwhile, I'll venture to predict your work's subscription list will support you; and if it does not, something else will, depend upon it!'

So spake my friend H. B. Another friend (previously introduced to the reader, Jack R——), was of opinion that I required 'nothing but to be known;' to which end he facetiously suggested that I should put on a pair of tight 'inexpressibles,' with one red and one yellow leg, and walk daily from Charing-cross to the Mansion-house, till people should become universally bent on learning who the d—l that most distinguished and party-coloured individual might be. Then would follow the answer—'O, that's W——, the author of "Twenty Select Views of the Roman Antiquities," and the prospective designer of the countless architectural works, which will be similarly illustrated by some young aspirant of posterity, under the title of "Select Views of London Remains."' About that time the celebrated Romeo Coates had been manifesting all the advantages that belong to personal eccentricity, by driving about in a car like a cockle-shell, and by dying over and over again, as an amateur Romeo, at the Haymarket Theatre. Perhaps I should have done well, could I have emulated the conduct of the redoubted Coates; but though I lacked not ambition, yet was I passing cowardly; and, if a pun may be excused, in connection with so serious a subject, I fancy that the advice of my friend Jack would have been 'more honoured in the *breech* than the observance.'

I therefore adopted the council of my friend H. B. who although as alive to fun as the well-known caricaturist signing with the same initials, had yet as grave a purpose in his significant performance. I took the front ground-floor room of No. 2, Duke-street, Adelphi, with a sleeping garret in the roof. A brass plate announced me as aforesaid; and I was thereafter to be found as hard at work at my drawing-table, with as much solemnity of aspect, and with as much seemingly important occupation as ever gave professional dignity to *the* Pecksniff of world-wide celebrity. Ah! that dear old drawing-table! I'm writing on it now. It cost me six pounds. It was the first real piece of furniture I ever bought, and it is the last I will part with. It has had three or four new black leather coverings; and has been, for near thirty years, the stage of pleasurable, painful, interesting, harassing effort; the support of my sedentary diligence; and the silent witness of that minute industry by lamp-light which prematurely mounted on my nose a pair of spectacles. My next purchase was a glazed mahogany bookcase, with a most official-like *escritoire*, fascinatingly furnished with drawers gemmed with ivory buttons; with pigeon-holes for folded papers, a falling front, sustained in its horizontal position by brass quadrants, so as to serve as a writing-desk, charmingly verdant with green baize; all the required fitments for ink and pens, wax and wafers, and large drawers underneath admirably adapted for store of drawing-paper and miscellaneous stationery. What with a few books already in hand, some others presented me by H. B. and my third grand purchase, "Nicholson's Architectural Dictionary," I so contrived their 'thinly scattered' disposition as 'to make a show.' A large geometrical and practical-looking drawing in a plain flat oak frame, hung over the mantel-shelf, completed my official insignia; and thus, the scenery and the 'properties' being prepared, the next thing was to act the drama in real earnest."

ROAD FROM BROMPTON TO THE PARKS.

YOUR columns are no strangers to the efforts now being made to obtain for the inhabitants of Brompton ready access to Hyde-park, through Brompton-square and Princes-terrace, nor to the fact that Mr. Elger, the principal owner of the latter, objects to any communication between the two being effected, on the score that his property, being so superior to Brompton and Brompton-square, would be seriously injured by being brought into contact with it! Now, to say nothing of Mr. Elger's bad policy in so laying out his property as to excite the longings of the Bromptonites to participate in the boon of the opening into Hyde-park, granted to the owners of Princes-gate, &c. but surely not for them exclusively,—allow me to inquire how Mr. Elger contrived to get drainage for his property? Does not all the refuse from his property (and fine as it is I suppose it has some refuse) go through Brompton? Were not the very sewers that convey it built almost or solely at the expense of the then owners of Brompton-square? Did Mr. Elger pay anything towards that expense, or did he adopt a circuitous route, in order to avoid paying any such expense? If his sewers go into Brompton, why have the Commissioners of Sewers departed from their usual course of obliging the ground, road, or way over them to be thrown open to the public? As, then, Mr. Elger is under such obligations to Brompton for removing his impurities, he surely ought to afford its inhabitants every facility in his power for escaping from them into the pure air of Hyde-park and Princes-terrace. That the entrance into Hyde-park was attended with some expense, no one doubts; but still it was a boon granted by public authorities on public grounds, no doubt; and he will remember where it is recorded, and what was the treatment he received, who refused to extend to others the same consideration that he had received himself. And then let him consider which would injure him most, opening Brompton-square at the south end, or closing Princes-gate at the north end, of Princes-terrace? Opening Brompton-square or Rutland-street? Much as you complain of the Brompton omnibuses, allow me to inform such of the inhabitants of Princes-terrace as are not too aristocratic for such modes of transit, that they run with more frequency, are as clean and as well appointed and conducted as the red ones frequenting the Kensington-road; and that should they ever have occasion to extend their walks in the direction of Belgrave-square, Buckingham Palace, and Westminster, they would find a shorter and far more respectable route through Brompton-square, &c. than through Knightsbridge, which, thanks to the military and the present tenure of church property, is never very enticing; and after a very early hour in the day is literally impassable for ladies or families, unless in carriages or under the protection of powerful escorts. W. W. POCOCK.

COMMUNICATION WITH THE GUARD.

SEEING in your journal some remarks relative to establishing means of communication between the passengers and guards, and guards and drivers, of railway trains, may I beg the favour of a few lines of your valuable space, to show how the matter really stands. Some years since, nearly thirty different plans were brought before the Society of Arts, at the instance of Mr. Harding, some of them very ingenious. The society did me the honour of awarding their Isis medal for the plan I then proposed, and which plan was exhibited in the Exhibition of 1851, and gained there the approval of the jury's reporter, Mr. Glaisher, in the following terms, at p. 283 (class 10):—"Allen (No. 413, p. 454) exhibits an electro-magnetic railway-train alarm: it consists of a copper chain (wire), intended to be placed over every carriage, the connection between each being established by the *guard-chains*: on the circuit being completed, the ordinary steam-whistle discharges the steam. The arrangements are as simple as well can be."

Now it seems to me, after the numerous plans that have been suggested, that it is complete waste of time endeavouring to devise further means.* It is not means that are wanted, *but a disposition to use them*. I may add, that the guard-chains being used as the means of transmitting the current, necessitated no *additional* connections being made. The plan has been *proved* practicable, and might have this advantage, that in the event of any portion of the train getting disconnected by breakage of the coupling, notice would be given. Mr. Stephenson, Mr. Bidder, Mr. Brunel, and others, saw the plan at the time, and the former gentleman referred me to the Telegraph Company's manager, where, I need not say, the matter ended.

EDWARD E. ALLEN.

ANOTHER correspondent, referring to the position of danger in which the Hon. W. C. Spring Rice was placed whilst travelling upon the Great Northern Railway, in January last, suggests "that the lamp now in use should, in each carriage, be made capable of being raised above the level of the roof of the carriage by means of a handle, where, suspended in the air, it would be immediately observed by the guard from his watch-box on the top of the last carriage. This would be sufficient *for the night*. *For the day* (since, perhaps, so small an object as a railway carriage-lamp might not be sufficient to attract attention), an apparatus connected with the lamp, and being a single or, better, a double vane, brightly coloured, would do. The *abuse* of this arrangement by timid or thoughtless people should be guarded against by a high fine."

RESPONSIBILITY UNDER SUB-CONTRACTS.

AN action was recently brought in the Court of Exchequer, which affords a useful warning. It appeared that the defendants, Messrs. Rigby, the contractors, of Westminster, took a heavy contract in improving the terminus of the Blackwall Railway, Fenchurch-street. They sub-let this contract to several parties, and these sub-lessees, it would appear, sub-let again until the sub-contracts reached the very labourers. The plaintiff in the action, Mr. Creed, resided at the corner of America-square, Minories, and it became necessary to cut a corner of his house away. In repairing this damage, some of these sub-contractors recklessly cut the gaspipes; and in their haste to make the most of their contract, neglected to take steps to prevent the escape of the gas. The consequence was, the gas rushed into one of the plaintiff's rooms, and there got confined. Mrs. Creed, smelling the gas, went in search of it with a lighted candle; and upon opening the door of the room in question the light caused a terrific explosion. The unfortunate lady was literally blown up, and it is a dispensation of Providence she escaped with her life: as it was, she was fearfully burnt in the face. Both her eyelashes and eyebrows were burnt off, and

* This is precisely what we have for years maintained.

her right arm and hand much injured. She was confined to her bed for six weeks; and the issue is, that she is a cripple for life. For the negligence Mr. Creed now sought compensation in damages. The counsel for defendants did not deny the facts as stated, but contended that Messrs. Rigby were not liable in law, they having sub-let the work to other parties, and could not be held responsible for the neglect of another contractor's men. The judge (Platt), in summing up, appeared inclined to this view; but the jury gave a verdict for the plaintiff; damages, 250*l*. The judge upon this gave defendants leave to move to enter a nonsuit, in the event of the Court above being of opinion that the last contractor, and not the first, is liable for negligence.

Miscellanea.

ROAD NORTH AND SOUTH.—Now that extensive building the Panopticon is about to be opened to the public, in Leicester-square, to say nothing new of Wyld's "Globe," and the other half-dozen marvels of that locality, will you give a word for a New Street to open out the west end of the National Gallery from Trafalgar-square to Leicester-square, through St. Martin's-street? this would be a short cut, and save much inconvenience, give a western front to the National Gallery, and perhaps add a few feet to that royal "poke-hole" of a place, the sculpture-room: it would also relieve that delightful drive up Dorset-place and Whitcombe-street, for which too much cannot be said in *dispraise*.—T.

MATERIALS FOR POTTERY, GLASS, ETC.—Few are aware of the great importance of the common and superior clays of this country to our manufacturers. The following statistical and other details are gleaned from the *Plymouth Times*. The Cornish and Devonshire china clays, or Kaolin (with two exceptions), come from the neighbourhood of Bodmin and St. Austle. At least 50,000 tons are annually prepared there for making porcelain, and sent off to the Staffordshire potteries in blocks as white as snow, packed in casks. An increased demand for the clays in question has sprung up of late years in consequence of their use in calico bleaching establishments, and in paper manufactories, many thousand tons being now used to give these substances an artificial body. About 25,000 tons of an inferior kind are raised at Bovey Tracey. This china stone is a semi-decomposed granite, but in a less advanced state of disintegration than the superior kind of clay. It is principally used as a glaze in the potteries. The total annual value of our earthenware munufactories is about £2,500,000 sterling, of which we export about £1,000,000 worth. About 750,000 tons of coal are annually consumed in making our ceramic wares, an amount equal to that used on the railways of the United Kingdom. The value of the gold consumed in the ornamentation of porcelain is estimated at £54,000. The common potters' clay is used for ordinary earthenware. The estimated weight and value of the earthenware of all sorts made in the United Kingdom are 160,000 tons, and £3,500,000. The exports for the last five years, in round numbers, were as follows:—53,000,000 pieces in 1848; 61,500,000 in 1849; 77,000,000 in 1850; 84,250,000 in 1851; and 89,000,000 in 1852: two-thirds of this quantity went to America. The dark Stourbridge clay is extensively used in the manufacture of crucibles. The fine plastic white clay used for the manufacture of the common tobacco-pipe, of which the consumption is so immense, is derived chiefly from Purbeck in Dorsetshire.

DARTFORD.—ALL SOULS, CROCKEN HILL.—Three memorial windows, executed by Mr. Holland, of St. John's, Warwick, have been lately placed in the east end of this church. The church, which is Early English, was consecrated nearly two years since. Mr. Edwin Nash, architect, and the builder Mr. Constable. The centre window is divided into three compartments, with medallions representing the following subjects:—The Crucifixion, below; the Resurrection, in the centre; the Ascension, filling the upper portion. In the windows on either side are depicted the Nativity and Baptism of our blessed Lord, the Last Supper, and the Entombment of Lazarus. The following is the inscription:—"To the glory of God and the memory of Margaret Cecil Perceval, daughter of the Honourable Edward Perceval, and grand-daughter of John, 2nd Earl of Egmont, died on the 23rd of January, 1850, aged 72 years."

FLUES.—A correspondent suggests that the cause of so many fires as we have had recently "may be attributed to our present very imperfect means of sweeping or cleansing our chimneys from soot, for it is notorious the ordinary machine generally used barely keeps sufficient space for the smoke to escape; and as in old houses timbers are often near, or may be in, flues, the danger must be very great, and the liability to fire very considerable."—H. B.

STRIKE LEADERS, "DELEGATES," AND WORKSHOP ORATORS.—Mr. W. J. FOX, M.P. who, if we mistake not, is looked on, among the working classes, as a sort of model member of Parliament, thus characterizes the agitators, whose "occupation" depends on driving those they lead from their occupations, and only continues and prospers so long as they can promote misunderstanding between employer and employed:—"A class has risen up amongst you who get their living by agitation and organization. They toil, not with their hands, but with their tongues. The beer-shop is their factory and home. The loom and the plough knew them not; yet they always affect to speak in the name of the working classes. They drill you to clamour, and would drill you to blood and plunder could they do it safely. They fawn on your first faults, and yelp and snarl at all other classes, or at those of your own class who resist their dictation. They are led by your enemies, or pretended friends, to make tools or fools of you for selfish purposes. Through them the demagogue cajoles, the aristocrat bribes, the adventurer plunders, and the spy betrays you; and they are a ready agency for any scheme, however preposterous, criminal, or disastrous." Hear what a fellow workman at Blackburn says of the treatment he has received. He states, in the *Preston Guardian*, that although he had for several months contributed to the support of the Preston strike from the earnings which ought to have gone wholly to the support of his own family as well as of himself, no sooner had he ceased to do so than he was driven remorselessly out of all employment, without a moment's notice, at the instigation of the "delegates," who induce or compel the hands at every mill to threaten a strike against all who decline to "stand and deliver" a determinate proportion of their own hard earnings to support those who will not work for their own support,—a threat which ends, of course, in general, in the expulsion of the "black sheep" with whom the other "sheep" will not associate. "Hundreds of families," says this poor fellow, "are intimidated and compelled to pay to the turn-outs through fear of being hooted and stoned through the streets. But the delegates have found another way of doing business. They persuade the whole of the hands at every mill to strike against those who decline to pay. A two-loom weaver is compelled to pay 1s. 2d. per week, and a four-loom weaver 2s. 4d. Now I considered this was not right, and I could not afford to pay it, and that is the only reason why I have been turned into the streets with a wife and family, while the delegates are running away with more than 2*l*. per week, besides their travelling expenses. While their money is forthcoming the strike will never end. The delegates are standing out against their masters because they say they cannot do as they like with their own money, and straightway they come to Blackburn and tell people they *must* pay a certain amount of theirs towards their support, or be turned on the streets. Now is this consistency?" There is no despotism more remorseless and cruel than that which some who bewail their own fate as slaves to capital exercise over their own fellow-workers, under the preposterous guise, too, of brotherly *union*.

THE PERNICIOUS ESCAPE OF GAS AND TAR IN THE SUBSOIL OF STREETS.—A correspondent, "W. D." gives an instance of the offensive impregnation of the subsoil of the metropolis to which Dr. Letheby lately drew attention, and which occurred in Bermondsey-street. While repaving, the pernicious effects of the gas escapes, says our correspondent, were fearfully disgusting and onerously apparent, for the soil was literally surcharged and oozing with the stinking poison, and so rotten therewith that the whole had to be removed to the depth of about 2 feet, and replaced with concrete. A manager of gas-works informed him that this was not at all surprising, since "escapes" were estimated at thirty per cent. of the whole manufacture!

PAPER FROM WOOD.—A patent for the manufacture of paper from wood fibre has been taken out by Messrs. Watt and Burgess. It is said to be equal to any writing-paper now selling at 7d. a pound. The cost of production is stated to be somewhat under 25*l*. a ton—more than 12*l*. less than the price of rag paper now in use. What with straw paper, and wood paper, there seems to be an end to the fear of rags not being capable of coping with the growing literary wants of the age. Doubtless it was this very fear, together with the cost of rag paper, which led inventive minds to the idea of using other fibrous substances such as straw and wood, as substitutes for linen and cotton fibre in the composition of paper.

AMERICAN LEAD TRADE.—The following is a comparative statement of the import of lead at the port of Philadelphia for the last four years:—

	1850.	1851.	1852.	1853.
Coastwise... pigs	48,333	38,837	41,011	29,250
Foreign..... „	11,971	14,787	13,881	11,387
Total... pigs	60,304	53,624	54,832	40,637

THE ARTESIAN WELLS OF COLCHESTER.—In a lecture recently delivered at Colchester by the Rev. J. T. Round, he gave the following details as to the artesian wells in and about that city. There are already five wells, varying in depth from 244 to 353 feet. The oldest, that on the works of Mr. John Mann, when first opened, yielded twenty-five gallons per minute, and the water overrun a pipe 12 feet above the surface: it still supplies from eighteen to twenty gallons per minute. Mr. Samuel Brown's shaft descends into the chalk at least 167 feet, which, with 140 feet to arrive at the chalk, makes the total depth at least 307 feet. The water overflowed a pipe of 13 feet 6 inches above the ground, and still fills the tanks at a level of 10 feet 6 inches above the surface. In boring Mr. Hawkins's shaft, out of 150 feet before chalk was reached, 115 feet were gravel in three beds: this shaft descends 150 feet into the chalk, and therefore the whole depth is about 300 feet. The most recent of the five artesian wells here is that at the waterworks. This is the deepest, inasmuch as it pierces 210 feet into the chalk, which, added to 143 feet in reaching the chalk, gives a total depth of 353 feet. When this shaft was sunk, the supply at Mr. Nicholl's well at the bottom of East-hill ceased to flow over the surface. In other places it has been found necessary to sink a much deeper shaft. The work of boring is at this moment going on at Combes, near Stowmarket, in order to obtain a supply of water for the tan-works of Mr. Webb, where the shaft has already reached the depth of 820 feet.

THE LONDON OMNIBUS TRAFFIC.—The following statistics of the omnibus traffic of the metropolis will be read with interest:—"There are daily plying through the streets of London 3,000 omnibuses, each carrying 300 passengers daily, or 2,000 a-week, which makes for the entire omnibuses 6,000,000 a-week, or the enormous number of 300,000,000 passengers a-year. Supposing each passenger paid a threepenny fare, the amount expended annually upon omnibuses would be 3,000,000*l*. An omnibus coachman driving an omnibus six miles a-day,—which is below the average, although he may not drive a greater distance than five miles each journey, yet passing the same ground over again, he would, in the course of seven years, perform the extraordinary distance of 173,890 miles, or 521,640 miles in twenty-one years, which several coachmen have done without varying route—say from Chelsea to the Bank. And yet, after all this labour and all this travelling, although each day they carry in their hands from 8 a.m. to 10 p.m. a hundred weight and a half (the supposed weight of the strain upon the horses) they have not, but in very few instances, saved sufficient to pay their funeral expenses. The manual labour employed comprises the following:—Coachmen and conductors, 6,000; horsekeepers, 3,000; occasional drivers and hangers-on, 2,000; total, 11,000. The value of the metropolitan omnibus establishment is estimated at 962,000*l*. viz. horses worth 600,000*l*.; omnibuses, 300,000*l*.; harness, 60,000*l*.; and sundries, 2,000*l*. In the expenditure figures 787,000*l*. for corn, 275,000*l*. for straw, 750,000*l*. for hay, and 7,800*l*. for horses' shoeing; to which are added, 156,000*l*. for wear and tear, and 110,000*l*. for harness, exclusive of stabling and its accidents.

HOW TO EMPLOY OUR CONVICTS.—This becomes a very serious question in relation to the abolition of transportation: it is one we have ourselves occasionally considered, and among other suggestions in our columns may be remembered one for the employment of convicts in granite quarries, another in the preparation of composts for manures, and so on. The conversion of our navy essentially into a steam force, suggests another way in which convicts may so far expiate their offences to the public, by supplying the navy with coals. And considering the conduct of our colliers, who no sooner obtain a rise in their wages, than, like negroes when emancipated, they prefer idleness for half the week, to any real improvement in their resources or condition, we do not think that their interests need be specially regarded in this question so long as they thus disregard their own. Besides, coal and other mines, ought really to be worked only by those who deserve no better than to grovel in the earth; and even three months' hard labour in a coal mine would doubtless have a salutary influence not derivable from mere prison discipline.

ORKNEY ANTIQUITIES.—The relics of the aboriginal inhabitants of Orkney are still thickly studded over the islands; but year by year they are diminishing in number. These may be divided into buildings or dwellings, barrows and graves, with the implements and weapons found in each, and standing stones. The buildings or dwellings are of three kinds:—1. Subterranean cells, constructed entirely beneath the natural surface of the surrounding soil. 2. Picts' houses, built wholly or partially above the natural surface, and in external figure and appearance closely resembling barrows or graves. 3. Picts' castles, broughs or burgs.

PALESTINE.—A society has been formed with the title of "The Palestine Archæological Association," having for its object the exploration of Palestine and the adjacent countries, with a view to the discovery of objects of antiquity. The prospectus says:—"If Egypt and Assyria have afforded so many valuable monuments to the truth of history and tradition, it may reasonably be expected that Palestine would yield as rich a harvest. Why should not the sites of the ancient cities and towns of the Hebrews, and of the aboriginal inhabitants of Canaan, be explored? And why might not the localities of important monuments —especially of the Hebrews—be sought for under the guidance of Scriptural authority and of tradition; as, for instance, the Egyptian coffins of the patriarchs at Hebron and Sychem—the twelve stones set up by Joshua at Gilgal and in the Jordan—the monumental record of the Law in the Stone of Sychem—the Sacred Ark, supposed to have been concealed by the prophet Jeremiah in some recess—with many others which will suggest themselves to the Biblical reader?"

ST. ALBAN'S NEW CORN EXCHANGE AND MARKETS COMPETITION.—In answer to the advertisemeut which has appeared relative to the above, thirty designs were received, from which the committee selected six, and ultimately by general opinion decided in favour of that submitted by Mr. James Murray, of Coventry, who was recently the successful competitor for a similar building in the latter place. Most of the competitors' names, it is said, were attached to their drawings.

ROCHDALE CEMETERY COMPETITION. — The chief premium has been awarded to the plans sent in by Mr. F. E. Stephenson; the second to Mr. David Lowe; and the third to Messrs. Abram Stansfield and Son.

THE METROPOLITAN COAL TRADE.—If the shipping interest took alarm at the introduction of coal by railway into London, and hence withdrew the usual or adequate supply of coasters from the trade, as they seem to have done, surely the recent extortionate rise in price must ere now have convinced them that the growing wants of the metropolis still require at least as large a fleet of colliers as ever they did; but the severity of the season along the coast, we believe, has had something to do with the deficient supply, and many vessels were actually lost. Moreover, the working classes are in no small degree indebted for their dear coals to the late strike movement, which extended to both colliers and sailors, the wages of both of whom were more than once raised, and which led to idleness among the colliers for almost one half of every week, instead of to the promotion of their industrial welfare, hence producing a scarcity of coal, and so helping greatly towards doubling and even tripling their price to the other working classes, in order to support the colliers in their idleness. An immense quantity of coals, however, has been delivered in the port of London within the past month of January. No less than 193,146 tons, in 641 vessels, have arrived,—83,900 of them from Newcastle, 40,905 from the Hartlepools, 34,771 from Sunderland, 6,380 from Wales, 1,155 from Scotland, and so on. The railways also have been endeavouring to make up for late deficiencies. While in January, 1853, coals by railway into the metropolis amounted to 48,000 and odd tons, in January, 1854, they amounted to 69,000 and odd. Of the latter, 34,900 and odd came by the Great Northern, 15,800 by the North-Western, and 8,000 and upwards each by the Eastern Counties and Great Western.

THE LEEDS TOWN-HALL TOWER.—The Leeds Town Council have agreed by a majority of twenty-five against sixteen to make a further grant to the new town-hall committee of 1,500*l.* for carrying the vestibule wall to the height of the roof, as a basis for a future tower, according to the design of the architect, as engraved and approved in the *Builder*.

METROPOLITAN SEWERS (DEPTFORD PUMPING STATION) BILL.—On the second reading of this Bill in the House of Commons, Mr. W. Williams objected to it on the ground of want of confidence in the present commission, and the intention of Government to replace it by a new one. Mr. Fitzroy stated that the purpose of the Bill was merely for the purchase of land for works that must be proceeded with.

THE NEW STREET BETWEEN THE EASTERN AND WESTERN PARTS OF THE METROPOLIS.—The writer of the remarks in our last on this subject has set forth his views more fully in a pamphlet on the subject.* The alternative he proposes to the line laid down, besides the high level street from St. Paul's Churchyard to Holborn, is "a straight street from Cheapside crossing the last-mentioned line, and then merging into another straight street (nearly a mile long) through the middle of the site of the Fleet Prison, up to the junction of Long-acre and Endell-street." "At Fetter-lane this new street would be in proximity to Fleet-street and a commodious junction made therewith."

* Weale, Holborn.

THE ORDNANCE MAP OF THE METROPOLIS.—The parochial boundaries and the existing sewers being about to be engrossed on the ordnance map, the Sewers Commission have voted 100*l.* for the purpose of having the boundaries correctly ascertained.

PECULATIONS OF BUILDERS' LABOURERS.—In the Marylebone County Court, an Irish labourer named Fox sued his late employer, Mr. Johns, a builder, for 12s. being four days' wages alleged to be due to him. From the defendant's evidence it appeared that he had been very much robbed of scaffold ropes, &c. and on watching caught plaintiff in the act of walking off with about 20 lbs. of rope wound round his body and hid in a basket. The judge refused to allow him a single halfpenny of wages, so that his rope's end, which ought to have been laid well on his own hide, cost him about 15s. besides loss of time, character, and employment.

NEWCASTLE-UPON-TYNE ANTIQUARIAN SOCIETY.—On Monday, in last week, the anniversary meeting of this society was held in the old Castle, Mr. J. H. Hinde in the chair. One of the secretaries read the report, from which it appeared that the catalogue of the museum was progressing satisfactorily; and that the funds were such as to pay the expenditure incurred. Various donations were announced, and objects of interest exhibited. A paper on the birthplace of the venerable Bede, contributed by Mr. R. Brown, of Sunderland, was then read. Office bearers for the ensuing year were elected.

NAPOLEON AND FAIRBAIRN.—The French Emperor gives frequent manifestations of downright goodwill to England: let us hope he dwells more on his great uncle's prognostication of future *alliance* between France and Britain in defence of European interests, than on the adoption of that uncle's ancient enmity towards us. A graceful compliment has just been paid us by the Emperor. Last year the Institute of France honoured Mr. Fairbairn, of Manchester, the engineer, by electing him one of its corresponding members, and he went lately to Paris for the purpose of taking his seat in the Academy. While there he received an Imperial invitation to the Tuileries, and was honoured with a lengthened interview, his Majesty presenting him at parting with a diamond box, marked with the Imperial initials.

WEST-END AND CRYSTAL PALACE RAILWAY COMPANY.—This company has agreed with the Brighton that the former receive a rental of 8,000*l.* per annum for the use of the line for through traffic. The cost of the line, as estimated by Messrs. Bidder and Fulton, the engineers, is to be 400,000*l.* The Brighton Company have agreed to work the line at the rate of 42½ per cent. upon the gross traffic receipts. The works commence in spring, and the line will be opened in about eighteen months, from Chelsea new bridge to the Brighton Railway at Sydenham.

SUNDERLAND WORKHOUSE COMPETITION.—We are requested to mention, that in lieu of a statement on this subject, which was printed in December last, the result is, that the first prize has been awarded to Mr. Oates, of York; and the second prize to Mr. Middlemiss, of Sunderland.

LONDON STREETS.—"Observer's" letter, in your last number, induces me to refer to the very dangerous state of the road from Charing-cross to Regent-street, from the iron sockets of water-plugs standing up like so many land-marks many inches above the granite; rendering this thoroughfare a most perilous one, both to the horse and his rider or driver. The consequences which may ensue from this neglect are fearful to contemplate. A timely repair or adjustment in the levels of the road may save a valuable limb or life.—H.

BIRMINGHAM EXHIBITION.—This exhibition has closed, after a successful season. The total amount of sales, including those through the medium of the Art-Union, reached 1,323*l.* 16s. During the last fortnight, when the price of admission was reduced to 2d. nearly 9,000 persons visited the exhibition.

THE ARCHITECTURAL SOCIETIES of the diocese of Lincoln, and of the archdeaconry of Northampton, purpose holding a joint spring meeting at Leicester, some time in May. A local committee is being formed to receive them.

CANNON-STREET, CITY.—Permit me to suggest, that the new street now forming from London-bridge to St. Paul's, be called Canning-street, instead of Cannon-street. The trading world would appreciate this alteration, as a compliment to commerce and to that illustrious man.—OBSERVER.

MILLED LEAD.—In the article on Plumbers and Plumbing, page 52, a passage is quoted from "Gwilt's Encyclopædia" (par. 2,214), by which it would appear that he does not advocate the use of milled lead. It will be seen, however, by referring to paragraph 1,784, that Mr. Gwilt's opinion decidedly coincides with that of the writer of the article.

E. B.

THE LONDON CORPORATION COAL-TAX.—Messrs. Longman and Co. have just issued a sixpenny tract on this subject, by Mr. John Dickinson, F.R.S. Mr. Dickinson gives a complete explanation of the origin, progress, and operation of the tax, which constitutes at present an *annual* charge of above 187,000*l.* on a prime necessary of life, levied, not on the inhabitants of the metropolis alone, far less of the City, but on every inhabitant of every town, village, hamlet, and country dwelling within twenty miles from the General Post-office in the city of London! This "black mail," as it may well be called, it is here asserted, has progressed by underhand tricks, played upon Parliament and the public, in inducing the former to increase and extend the power of the City Corporation to levy this tax, under false pretences, or in Bills with designedly misleading titles and pretended purposes; and as for its operation, to have long and specially oppressed the poor, on whom it has conferred in return no benefit whatever, even in the shape of metropolitan improvements, which, in the opening of great thoroughfares, have, on the contrary, militated greatly against the convenience, comfort, and health of the metropolitan poor. The recent inordinate rise in the cost of coals throughout the metropolis brings this subject with peculiar force before the public eye at this moment.

THE PHOTOGRAPHIC SOCIETY received a large number of visitors at a *conversazione*, on Tuesday evening last, in the Suffolk-street Gallery. It was a source of gratification to us to find that the observations we have considered it our duty to make recently, had been received on all hands in the spirit in which they were written, and that the views which they set forth, were received as correct. We anticipate with confidence good results, and shall be amongst the first to congratulate the council when these appear.

DONCASTER SCHOOL OF ART.—A meeting convened by circular, was held in the Guildhall, in this town, on Thursday in last week, for the purpose of establishing a School of Art in Doncaster, in connection with the Government Department of Practical Science and Art at Marlborough-house. The Rev. J. Campion was called to the chair. Mr. Young Mitchell, the head-master of the Sheffield School of Art, gave an explanatory statement of the Sheffield school. He thought that Doncaster was peculiarly well situated for a school of art. The town possessed all the elements of success. There was no class of workmen to whom a knowledge of art would not be useful — to some it was absolutely essential — such, as wood-carvers, die-sinkers, chasers, carpenters, cabinetmakers, masons, and blacksmiths—but it would be a narrow mind which could regard art in its utilitarian aspect only. All would benefit by it. It elevated the mind, opened the perceptions, and shed a refining and civilizing influence over the whole community. Many practical questions were put to Mr. Mitchell, showing that the meeting were in earnest. A resolution that a school be formed at Doncaster, was unanimously agreed to, and a provisional committee and secretary *pro tem.* were appointed.

GOOD HOPE FOR THE CAPE.—A company is proposed to be formed in London for constructing railways at the Cape of Good Hope. The intended capital is 600,000*l.* The promoters ask for a guarantee dividend from the Colonial Government.

HOW TO MAKE WOOD LOOK OLD.—Wash it, says a country paper, with a weak solution of sulphuric acid in water. A strong solution, as every one knows, will burn and blacken it entirely. Thus the shade may be deepened *ad libitum*. If the wood be dry at heart, it is said that this mode of treatment will even preserve it better than paint: it is therefore recommended for garden and other external erections in wood instead of paint.

BATTERSEA-PARK. — The Commissioners of her Majesty's Works and Buildings are proceeding with the necessary steps for the clearance of the ground for this park. On Tuesday, the materials of about twenty houses were brought to the hammer, by Mr. W. R. Glasier, the auctioneer. This was the second sale, the first having taken place in December last, when the materials of the old Red-house, White-mill, &c. were disposed of. On Tuesday, also, the workmen commenced the necessary operations for the formation of one of the permanent entrance roads.

MEN AND MASTERS IN THE NORTH.—The *Elgin Courant* mentions, that from the increasing stir occasioned by the erection of a number of new buildings, a great demand at present exists in that quarter for operative masons. The masters have just advanced wages to 4½d. an hour; and notwithstanding the influx of hands from other localities which this rise has produced, the supply is considerably below the demand.——The ship-carpenters of Montrose have been on strike for 24s. a week, in place of 20s.